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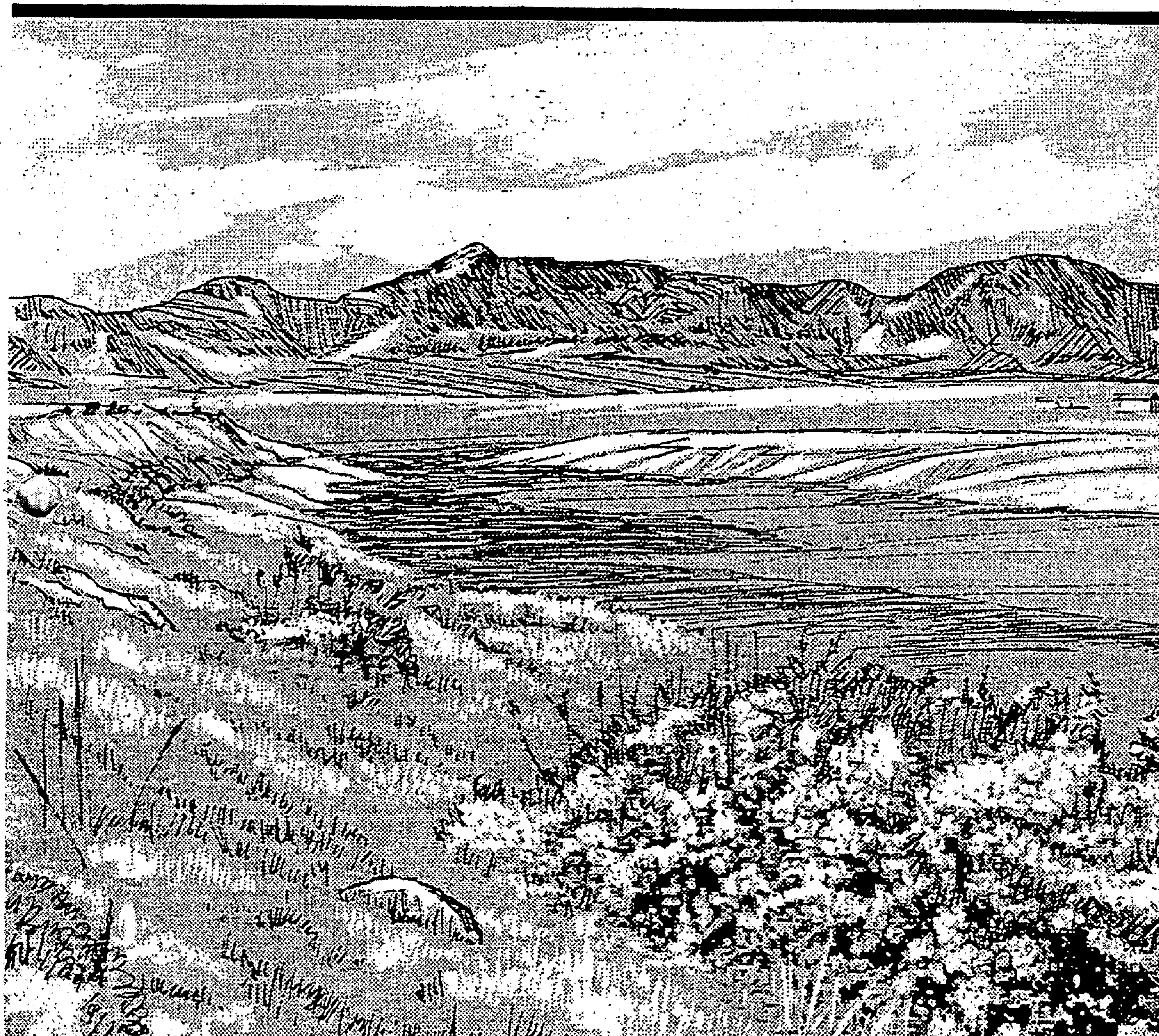
US Army Corps of Engineers
Omaha District

Rocky Flats Plant
Wetlands Mapping and Resource Study



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ACKNOWLEDGEMENTS

The need for a wetlands study was first identified by the Department of Energy (DOE), who explored a working relationship with the U.S. Army Corps of Engineers (Corps) through the help of Mr. Richard Gorton, Chief of the Environmental Analysis Branch. Project work was later funded and then initially scoped by DOE personnel. Corps staff then developed a scope of work and schedule. Contractual development and monitoring was conducted by Mr. Kirk Engelbart through the Corps' Hazardous, Toxic and Radioactive Waste (HTRW) program.

The wetlands mapping study was conducted through the assistance and cooperation of several Federal and State agencies, and a DOE contractor, EG&G Rocky Flats Inc. (EG&G). Roles varied according to study phase. Prior to initiation of the fieldwork, an interagency meeting was held in the offices of DOE at the plant site. This meeting, attended by representatives of DOE, EG&G, the Environmental Protection Agency (EPA), the Corps, and the Colorado Department of Natural Resources ensured that the purpose and methods of the study were understood and agreed on. The study methods were first presented by the Corps to the group and then demonstrated in the field.

The actual field mapping was conducted by Corps personnel, including Ms. Candy Thomas, Mr. Todd Noble and Mr. Don Becker. Mr. Ron Reiman of DOE provided invaluable assistance in providing access to a trailer to use as a fixed base station for operation of the Global Positioning System (GPS) system. The day-to-day assistance from Britt McCarthy (SMS) and field support of Jeff Krause, EG&G, was especially appreciated throughout the field portion of the investigation.

Soil profile observations were conducted with the assistance of Mr. Larry Woods, EG&G; Mr. Terry McKee, Corps; Mr. Alan Price, USDA-SCS; and Ms. Terry Skadeland, USDA-SCS. The interpretive assistance of this group was invaluable.

Mr. Tim Lovseth, Mr. Ed Mast, and Mr. Rob Smith, all from EG&G, provided assistance in retrieval of shallow alluvial well data located near a few of the wetland sites.

Many other individuals provided assistance with retrieval of information and review of the maps and report We especially appreciated the review of the draft report and maps conducted by Mike Gilbert from the Corps Regulatory Branch.

Completion of this project fell behind schedule early in the study and continued throughout the project. The large number of and complexity of wetland types, combined with logistical and technical problems and other work commitments, precluded a timely delivery of products. Both the understanding and patience of DOE staff and its contractors throughout the study are greatly appreciated.

EXECUTIVE SUMMARY

The study purpose is to accomplish an advanced identification of wetland resources prior to the initiation of CERCLA-related construction and related remedial work at the 6,550 acre Rocky Flats Plant site. This facility, on the National Priority List, is located near the foothills of the Front Range, just south of Boulder, Colorado. The work was conducted under a contractual arrangement with the Department of Energy, who operates the facility and is responsible for site remediation of hazardous, toxic, and radioactive wastes. Deliverables include wetland maps, digital data files, and a technical report. The study was coordinated with the U.S. Environmental Protection Agency, the Colorado Division of Wildlife, the USDA Soil Conservation Service and the Regulatory Branch of the U. S. Army Corps of Engineers.

Wetland delineation and characterization was conducted through field surveys, utilizing the U.S. Fish and Wildlife Service classification system and the 1987 Corps of Engineers Wetland Delineation Manual. Field surveys used a Global Positioning System (GPS) to capture spatial data and selected attribute data. Additional site-specific wetland data were compiled on field sheets which were later converted to a spread sheet format through the use of a personal computer (PC) and Excel software. GPS files were then corrected and converted into ARC/INFO GIS (Geographic Information System) files and transferred from a PC to a Sun workstation. Use of the GPS system enabled the development of a layer of wetland information which supplements other GIS-based resource data available at Rocky Flats. Features displayed on the wetland maps assumed the configuration of polygons, linear elements, and points. Final copies of the wetland features, along with existing topographic,

hydrology, and cultural features, were printed at a scale of 1:2400 (one inch equals 200 feet). This large scale required printing of the data on 9 separate sheets. A composite map of the site at a scale of 1:7200 was also printed.

The majority of Rocky Flats wetlands are natural systems. The ecological structure and function of these systems are controlled by the pattern of slope runoff and ponding, channel discharge and morphology and ground water seepage or discharge. They are broadly grouped into slope wetlands and stream wetlands because of geomorphic, hydrologic, and ecologic differences.

About 1100 wetlands and deep water habitats are mapped and described. About 27 per cent are found along the valley slopes, while the remainder are located along the stream channels. In terms of numbers, about 60 per cent occur within the Walnut and Rock Creek drainages. On an area basis, however, 60 per cent lies in the Woman Creek and Rock Creek drainages. These basins have more of the larger, slope wetland complexes. The Walnut Creek drainage supports more stream wetlands and deep water habitats because of the highly dissected topography and numerous impoundments.

Slope wetlands are typically clustered around active seep areas discharging ground water. Since the water source is naturally regulated, habitat conditions are stable for development of a diverse biological community. There are 16 active seep areas in the upper Woman Creek drainage area, while Rock Creek and Walnut Creek drainages had 9 and 3, respectively. The numbers of active seeps likely vary, depending upon year-to-year or longer term fluctuations in water recharge/discharge rates. During 1993 along the

Walnut Creek drainage, some seep areas were noticeably drier than in previous years.

Many of the stream wetland habitats are subject to irregular stream flows and greatly fluctuating habitat conditions, while others are more stable due to seepage inflows; e.g., the abruptly incised and deeper drainages of the Rock Creek watershed. These wetlands have vegetational affinities with montane wetlands in the foothills.

Natural values of site wetlands include erosion control, flood water storage and attenuation, water quality maintenance, natural heritage, and fish and wildlife habitat. Wetlands in the Rock Creek and the Antelope Springs area exhibit the most biodiversity and are very productive ecosystems.

The wetland data developed through this effort will assist DOE in developing a remedial action plan for stabilization of hazardous wastes at the Rocky Flats Plant. Any onsite remedial work requiring construction will require an evaluation of impacts to wetlands. This analysis, under the oversight of the EPA, will need to determine if any of the remediation work will induce alterations in aquifer recharge or changes in ground water flow and discharge. Offsite impacts to the wetlands are also of concern, and developers and regulators alike need be aware that land development on the Rocky Flats Alluvium can potentially alter wetlands which are under Federal ownership and jurisidiction. Adverse effects can result from altering surface discharge patterns in nearby water supply ditches, or through altering the aquifer yield and its connectivity to the wetlands.

ROCKY FLATS PLANT

WETLANDS MAPPING AND RESOURCE STUDY

CHAPTER 1 - INTRODUCTION

STUDY PURPOSE AND NEED

This study was conducted under a contractual arrangement with the Department of Energy (DOE), Rocky Flats Office (RFO), for a sitewide wetland evaluation at the Rocky Flats Plant located just south of Boulder, Colorado. The DOE scope of work for the project, dated March 1993, specifically requires identification and delineation of all wetlands on the site, as these are under the regulatory authority of Federal agencies. The Environmental Protection Agency (EPA) has primary wetlands regulatory authority at the Rocky Flats Plant since the industrial area and parts of the buffer zone contain hazardous and toxic weaste which are subject to provisions of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

Agencies also concerned about site management of wetlands include the U.S. Army Corps of Engineers (Corps), the U.S. Fish and Wildlife Service (USFWS), Colorado Division of Wildlife (CDOW), the Colorado Department of Health (CDH), and downstream municipalities which utilize surface water supplies potentially affected by Rocky Flats Operations.

Past studies have identified many of the wetlands at the site (DOE, 1991). However, these have not been detailed enough to address potential impacts related to ongoing operations and future HTW-related stabilization and construction work. Thus, more information of site wetlands is needed for the planning and execution of future work.

CHAPTER 2 - REGIONAL SETTING

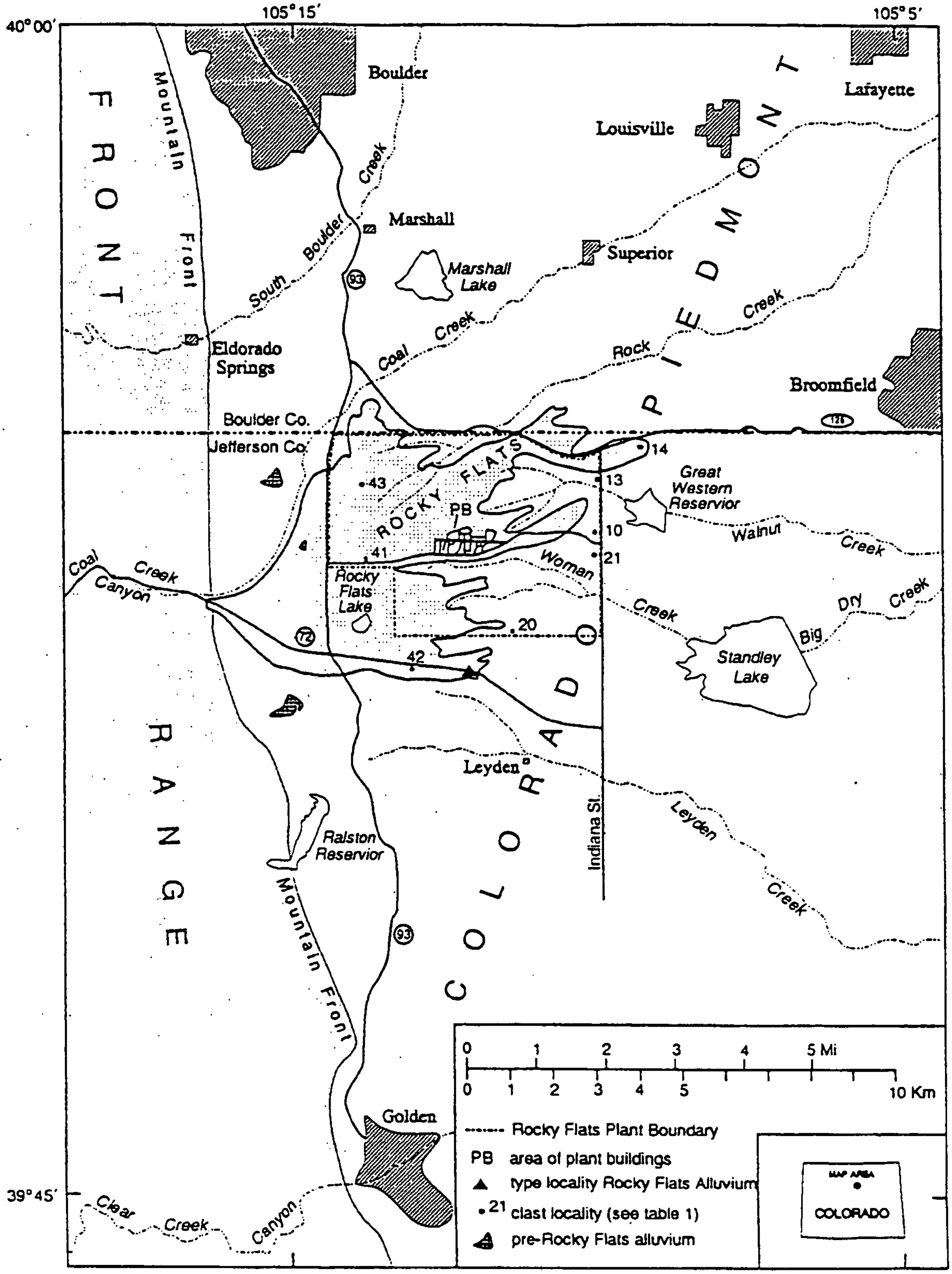
LOCATION AND PHYSIOGRAPHY

The Rocky Flats Plant Site is located within the Colorado Piedmont area which is transitional between the vast Great Plains to the east and the Front Range of the Rocky Mountains to the west. The Piedmont area also includes a highly urbanized zone which stretches along the Front Range from near Fort Collins south to Colorado Springs. The Front Range is loosely defined as a group of north-south trending mountains that rise abruptly from the Great Plains, extending from near Colorado Springs to just south of the Wyoming border (Figure 2-1).

CLIMATE

The Front Range greatly modifies the flow of air masses and greatly affects the regional climate. In winter, cold, polar air from the plains is blocked against the east side of the Front Range, resulting in temperatures that are similar to those of the plains; likewise more moderate Pacific air from the west is uplifted and cooled and may create cloud cover and snowfalls over the mountains. At other seasons, the Front Range also blocks the flow of humid, warm Gulf air from the southeast, sometimes triggering snowfalls and heavy showers on the eastern slope and adjacent plains.

While the overall climate is semiarid and continental, topographic differences, slope aspect, and the influence of the Front Range affect local weather. Generally, temperatures are cooler at higher elevations and precipitation is slightly greater. Temperature inversions are quite common along the Front Range, which along with



Generalized map of Rocky Flats and surrounding area.

Figure 2-1

large amounts of man-made emissions, have considerably degraded air quality over much of the area. Winds are generally moderate in intensity and air flow typically is from the south. Local differences, however, can vary from the typical pattern. Occasionally, very strong westerly or chinook winds descend the Front Range and create very strong winds. These are most common in winter and gusts may reach 70 miles per hour (m.p.h.) each year at some locations. Mean annual precipitation varies from about 11 inches at Greeley, on the plains to nearly 19 inches at Boulder near the foothills. Most of the moisture falls during the growing season which is from April through September. Snowfall tends to be quite light on the plains, varying from 32 inches at Greeley to more moderate (73 inches) at the foothills near Boulder (Hanson et al. 1978).

LAND USE

Most of Colorado's people live in the Front Range Urban Corridor. The generally favorable climate and resources continue to attract various economic enterprises and large numbers of workers to the area. Major urban areas include the Denver metro area, Boulder, Fort Collins, Loveland, Longmont, Greeley, and Colorado Springs. Agricultural operations include dryland farming, irrigation farming, and livestock ranching. Because of urban water demands, shifts of water uses to municipal and industrial have been taking place for the past several decades.

GEOLOGY AND DRAINAGE

The Colorado Piedmont consists of highly dissected pediment or colluvial/alluvial surfaces at the east slope of the Front Range. This surface was derived from erosion of the Rocky Mountains during Pleistocene time. Alluvial fans developed from glacial meltwater where streams emerged from the Front Range.

Modern-day streams carry mountain runoff in these same channels and valleys; much is stored and diverted for use as municipal, industrial, and agricultural water supplies for the region. Major tributaries include the Big Thompson and Cache La Poudre Rivers and the Bear, Clear, St.Vrain, Boulder, and Cherry Creeks. Elevations vary from about 6,000 feet on the west to less than 5,000 feet in the plains. Subsurface flow and ground water levels vary greatly in the area and are affected by many physical variables, including topography, stratigraphy, permeability, precipitation, and evapotranspiration.

BIOTA

Shrub-steppe is the dominant vegetation formation of the western Great Plains. Short and midgrass species and small shrubs such as sagebrush are dominant. Stands of tall shrubs and hardwood trees are found along the banks and flood plains of the streams and rivers. These typically include willow, ash, and cottonwood. Animal communities are typical of those of the Great Plains. Whitetail deer inhabit the stream woodlands, while mule deer frequent brushy draws and rough topography of the uplands. Pronghorn antelope are also common in some areas.

SITE CHARACTERISTICS

LOCATION

The study site is located about three kilometers to the west of the foothills of the Front Range, and is approximately midway between the cities of Golden and Boulder (Figure 2-1). The site occupies 6,550 acres and consists of a centralized, built-up or controlled area (industrial area) as well as a large, encompassing buffer zone. Nestled in a rangeland setting, it is bounded by State Highway 93 on the west, State Highway 128 on the north, and Indiana Street on the east. The industrial area is accessible by road from both State Highway 93 and Indiana Street. The southern boundary passes through rangeland but is approximated by the drainage divide between Woman Creek and Upper Big Dry Creek. Figure 2-2 shows the location and general layout of the site.

During earlier periods of plant operation, the buffer zone was considerably smaller. The current as well as the former boundaries are also shown in Figure 2-2.

CLIMATE

The climate is generally similar to the Great Plains, but is altered by its close location to the Front Range and slightly higher elevation, which is up to 6,180 feet mean sea level (m.s.l.) on the southwest border. Winters are generally cold and dry, while summers are warm. July mean temperature is 72 °F, slightly cooler than Denver, while the mean high temperature is about 85 °F. Most of the precipitation occurs in spring and early summer. Mean annual precipitation is about 18.5 inches, considerably higher than Denver, and mean evaporation is from 50 to 60 inches. The growing season for native range plants is about 6 months long, or about April to September. Mean date of the first fall frost is October 4, while that of the last spring frost is May 9. Prevailing winds are from the west, and downslope or chinook winds can become violent. Because of its location near the foothills and Coal Creek Canyon, it is likely subject to more frequent high wind velocities than many other urbanized areas (Miller et al. 1974; Hansen et al. 1978) along the Front Range.

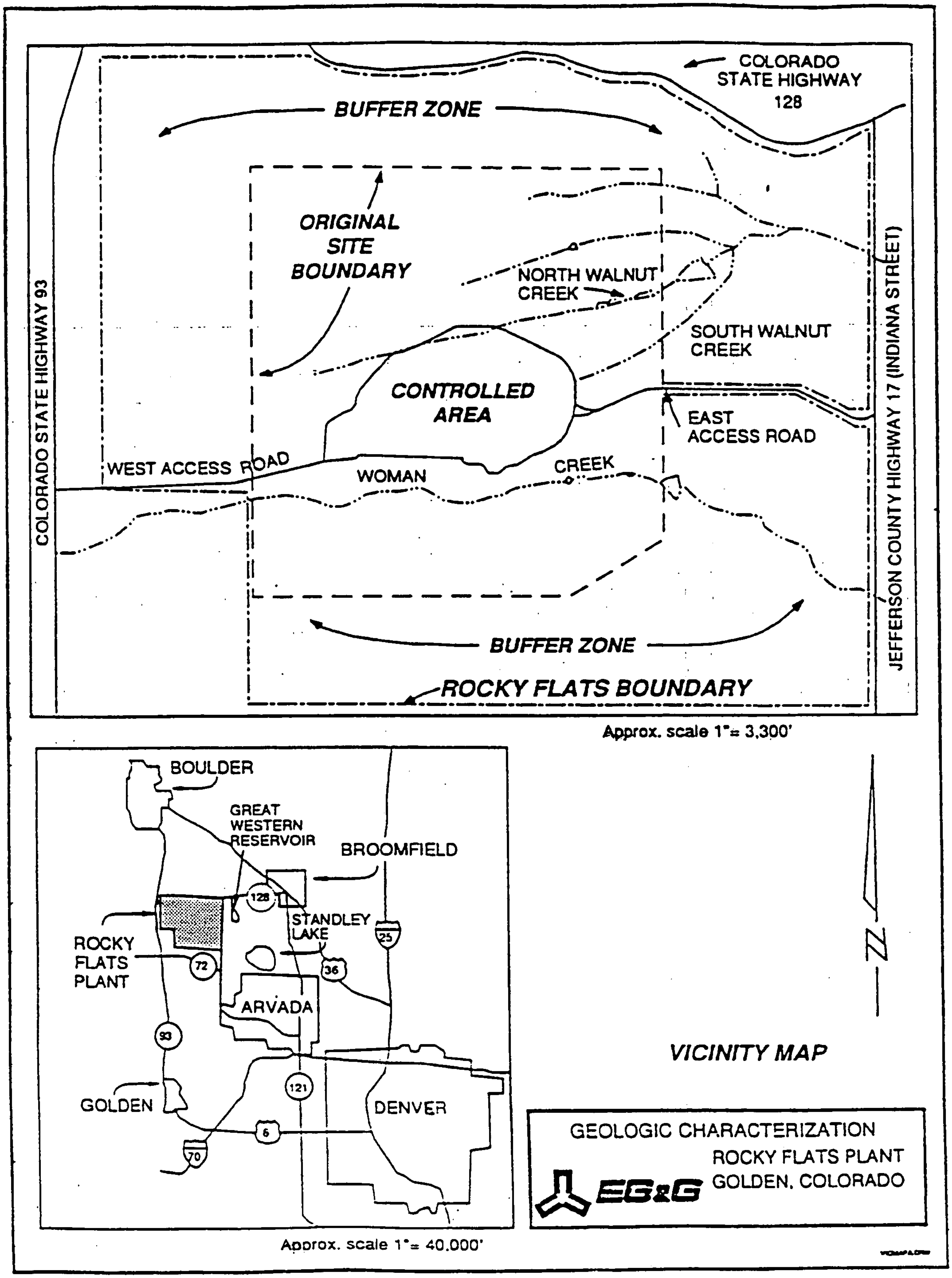

COLORADO
STATE HIGHWAY
128
BUFFER ZONE
ORIGINAL
SITE
BOUNDARY
NORTH WALNUT
CREEK
SOUTH WALNUT
CREEK
CONTROLLED
AREA
EAST
ACCESS ROAD
WEST ACCESS ROAD
WOMAN
CREEK
COLORADO STATE HIGHWAY 93
JEFFERSON COUNTY HIGHWAY 17 (INDIANA STREET)
BUFFER ZONE
ROCKY FLATS BOUNDARY
Approx. scale 1"= 3,300'
BOULDER
GREAT
WESTERN
RESERVOIR
BROOMFIELD
128
STANDLEY
LAKE
25
ROCKY
FLATS
PLANT
72
36
ARVADA
93
121
GOLDEN
DENVER
6
70
Approx. scale 1"= 40,000'
N
VICINITY MAP
GEOLOGIC CHARACTERIZATION
ROCKY FLATS PLANT
GOLDEN, COLORADO
EG&G

Figure 2-2

Because of the elevation differences at the plant site, slope exposure and angle, plant cover and soils, and other variables, significant microclimatic differences occur within and between various drainages. The magnitude of these variations, however, have not been defined.

GEOLOGY

Surficial deposits in the study area mostly date from the early Pleistocene period and include alluvium, colluvium, and valley fill deposits. The Rocky Flats Alluvium is a broad, planar deposit which dominates the upper drainages and drainage divides on the site. It contains boulders, cobbles, and gravel within a matrix of sand, silt, and clay. It is from 70 to 90 feet thick near the west plant boundary, thins eastward, and has eroded along much of the Walnut and Woman Creek drainages. Coarse colluvial deposits are common along the upper valley slopes, while lower bottoms are dominated by finer deposits derived from successive episodes of stream sedimentation and erosion. Because existing streambeds are narrow, recent alluvial deposits occupy only small areas.

The Arapahoe formation of Cretaceous age can be occasionally observed at the base of the Rocky Flats Alluvium. It is a continental deposit of interbedded sands and clays which has been eroded and has some surface relief. The Cretaceous-age Fox Hills, Laramie, and Pierre Shale are deeper bedrock formations and are also of continental origin. The above bedrock strata tend to be finer textured and more mineralized than the surficial alluvial deposits. The lowermost Pierre Shale formation serves as the ultimate bedrock control of the ground water hydrologic system at Rocky Flats.

SOILS

Two general textural types of soils are common at Rocky Flats: a stony or skeletal type developed on glacial outwash (Rocky Flats Alluvium) and a fine-textured type (clays and silts) developed on bedrock deposits, especially shales and mudstones. Depths of the A and B horizons tend to be up to 70 to 80 centimeters (cm). Surface horizons are typically very dark brown to grayish brown in color, while the B horizon is lighter, contains more clay, and frequently has a columnar structure.

Branson et al. (1965) noted that the stony soils derived from coarse alluvium supported more mesic prairie flora and exhibited higher moisture levels during the growing season than soils derived from finer materials. This was attributed to lower water retention forces in the coarse materials, which were about 80 percent medium sand size or larger. There is also less surface water runoff from the stony soil; in addition, the surface soil pH ranged from 6.0 to 6.3, considerably less than the pH values (>7.1) of the more limy, shale-derived soil. The latter soils are also high in montmorillonitic clays that tightly bind nutrients and retard moisture infiltration.

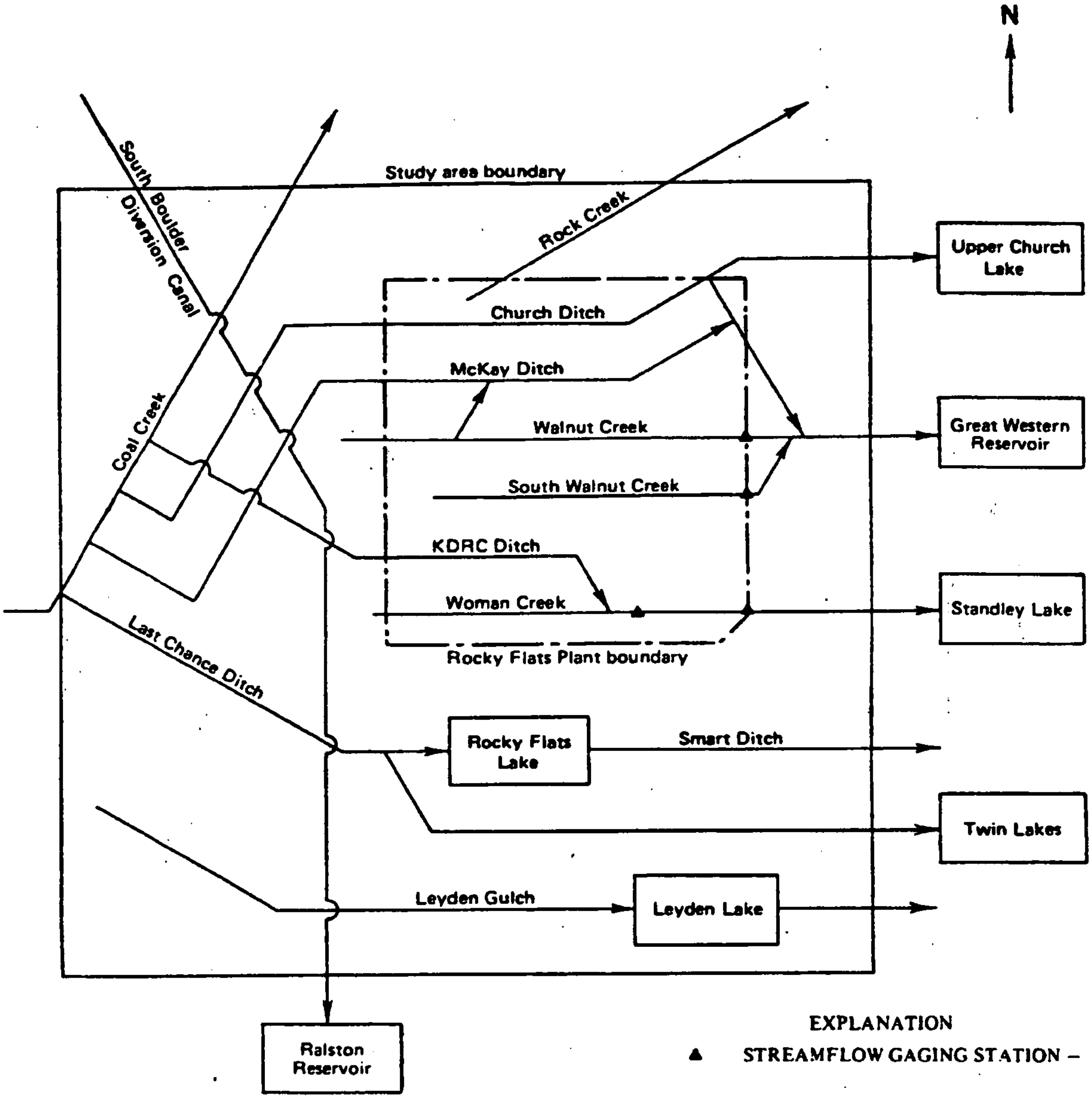
On the Rocky Flats Alluvium, which prevails at the surface on nearly flat headwaters and interstream divides at the site, the U.S. Department of Agriculture (USDA) has recognized two types of mature soils which have sandy loam surface layers and skeletal subsurface horizons (Price and Amen, 1984). These are the Flatirons and the Nederland soils. The former occupy flat to gently sloping areas, while the latter are on moderate to steep slopes. Both are brown, sandy loams and have very cobbly subsoils.

At slightly lower elevations along the more dissected and hilly lower Walnut and Woman Creek drainages, clayey soils such as the Denver, Nunn, Valmont, and Englewood soils predominate; however, in some areas the clayey soils are skeletal and contain large amounts of gravel and cobble. The cobbly-gravelly clayey soils are neutral in pH and typically found on convex ridges, steep slopes, or alluvial fan areas.

Nearly flat to undulating stream bottom areas at Rocky Flats are dominated by alluvial soils, predominately clay loams and loams. The clay loam soils such as the Englewood series are developed on nearly flat to gently sloping surfaces, are typically dark gray in color and alkaline at the surface, and are underlain by clay. The loam soils are formed in stratified, loamy alluvium on flat to gently sloping stream bottom or low terrace surfaces. The surface layer of a typical loam soil such as Haverson is grayish brown and is underlain by a subsoil of gray brown stratified materials which may include varying amounts of sand and gravel. Other alluvial bottomland soils which may occur as inclusions at Rocky Flats include the Alda, McClave, and Niwot soils which are somewhat to poorly drained. None of the above soils, however, appear on the National Hydric Soil List (USDA, 1991). Many other soil types (including hydric ones) are also likely found on the site due to its complex topography and drainage, but are not shown on soil maps because of the small map scales (Price, 1993).

PATTERNS OF WATER AND LAND USE

Development off and onsite has had a dramatic effect on the water and related land resources in the Rocky Flats area. Figure 2-3 shows water conveyance facilities in the area, while Figure 2-4 shows the major drainages. Two large watersheds occur in the area -- Coal Creek and Big Dry



Schematic diagram of surface-water system

(after Hurr, 1976)

Figure 2-3

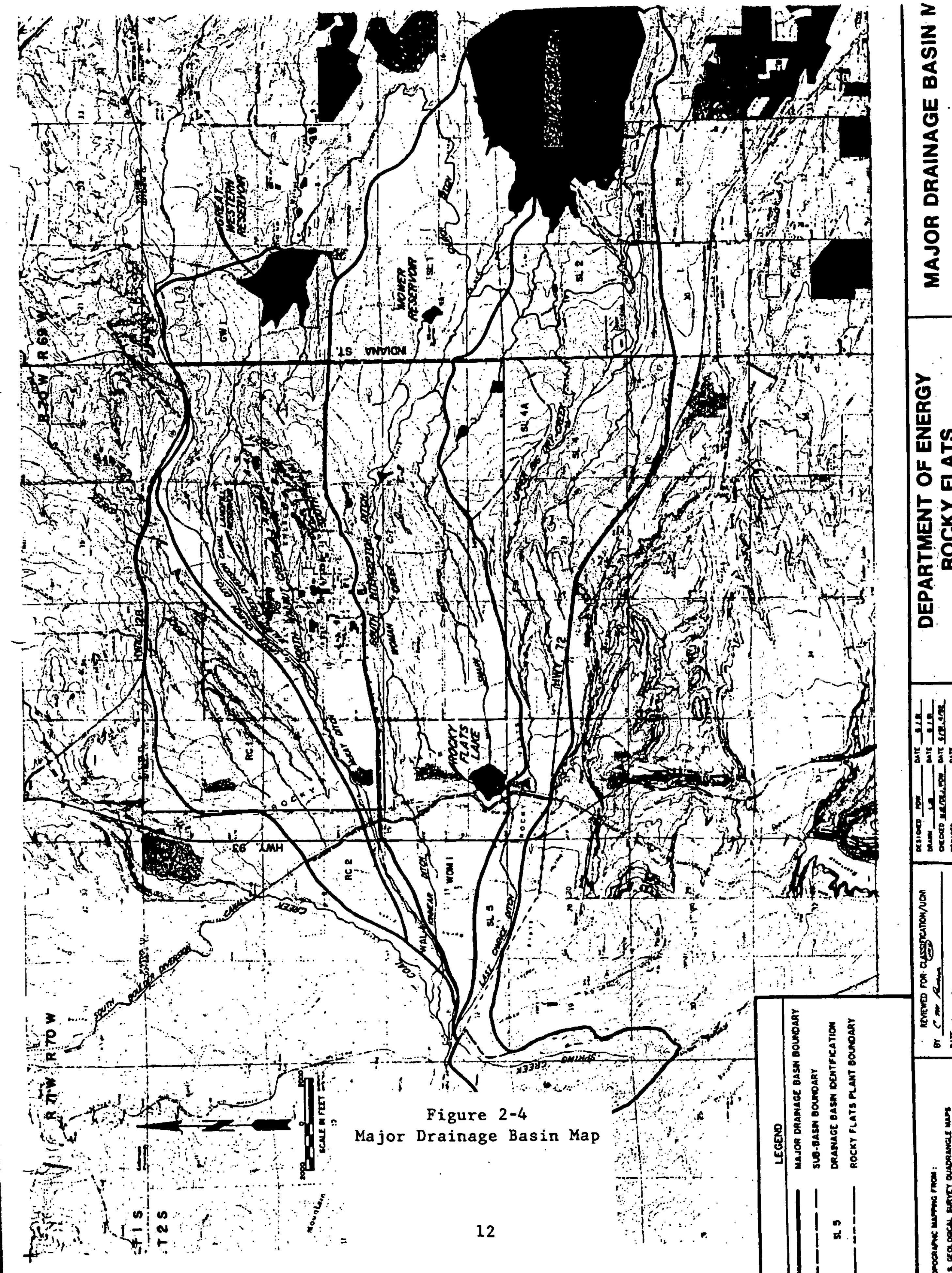


Figure 2-4
Major Drainage Basin Map

Creek. The former arises in the Front Range and borders the west and extreme northwest corner of the site, and runoff eventually reaches the South Platte River. It includes Rock Creek which is a small side drainage. Runoff from the Upper Big Dry drainage, which originates west of Rocky Flats Lake, and that from the Woman Creek and Walnut Creek drainages, join at the main channel of Big Dry Creek. These flows are then conveyed to the South Platte River some 42 miles downstream.

Water Use Facilities. Coal Creek and upper Big Dry Creek drainages are heavily tapped by an elaborate system of water diversion, conveyance, and storage facilities owned and operated by various municipalities and ditch companies. interests. The cities of Westminster and Broomfield control most of the water from Coal Creek. Along Coal Creek, west of the Rocky Flats Site, facilities exist for diversion of flows into the Upper Church Ditch and McKay Ditch. Upper Church Ditch conveys flows across Rocky Flats to Upper Church Reservoir, while McKay Ditch conveys flows to Great Western Reservoir.

Just upstream of the Church and McKay Ditch diversions, Coal Creek flows are also diverted into the Woman Creek drainage via Kinnear Ditch. These flows move along Woman Creek across the plant site and are eventually diverted off site to Standley Lake, or to Mower Reservoir via the Mower Ditch. Standley Lake is a storage facility for the city of Westminster, while Moyer Lake stores water for agricultural uses. The above interests also control surface runoff from the Woman Creek watershed above these lakes. Water from Rocky Flats Lake, which also originates from the Coal Creek drainage, is released into the Smart Ditch drainage just to the west of the plant site where it flows in a natural channel to the Smart Ditch diversion structure, where it is conveyed along a small ditch to ponds D1 and D2 for agricultural uses. Any excess flows in this small drainage accrue downstream to Standley Lake. While not crossing the Rocky Flats Plant site, the South Boulder Canal parallels the extreme southwest part of the site and conveys water to Ralston Reservoir. It is operated by the City of Denver.

These above watcr conveyance facilities greatly influence the natural surface water flows and ground water flow on the Rocky Flats site (EG&G, 1992), possibly affecting the volume of water emanating from seeps and springs in the area.

In addition, there are 14 small reservoirs (ponds) located in the buffer zone of Rocky Flats Plant. Most of these are used for effluent and stormwater runoff control.

Land Use. While the Rocky Flats site is surrounded by rangeland used for livestock grazing and forage production, the site itself is not utilized for such purposes. The presence of numerous fences, stock ponds and wells, however, reflect past livestock utilization of the site.

The Western Aggregate gravel mining operation is located along the western boundary of the plant site, between the buffer zone and State Highway 93. A large powerline crosses the Woman Creek drainage, and smaller lines parallel the access road to the central plant area.

The industrial area is enclosed within a security fence and consists of 385 acres. It includes process facilities; waste storage facilities; office buildings; a wastewater treatment system; and numerous streets, powerlines, and drainage ditches. The surrounding buffer zone includes 6,550 acres and is largely undeveloped; however, it includes numerous runoff control ponds, a sanitary landfill, numerous maintenance roads, firebreaks, water conveyance ditches, and a wind-energy testing facility.

Surface Hydrology. Streamflow in the area is affected by surface runoff following periods of rainfall or snowmelt, seepage and discharge in the stream channel, evapotranspiration, overbank discharge from adjacent springs and seeps, and artificial releases from ponds and wastewater-holding facilities. See Figure 2-4 for a map of the small drainages.

Most of the Rocky Flats site is drained by Rock Creek, Walnut Creek, and Woman Creek, which originate just west of the plant site. All are classified as ephemeral streams, and no outflow was observed during the fall of 1993. Flow was confined to a few upper drainages, and apparently decreased in a downstream direction due to seepage and evapotranspiration. Flows on site have been shown to be greatly affected by seepage and evapotranspiration (Hurr, 1976). From July to September 1974, diurnal flow fluctuations on Woman Creek were observed, ranging from 0.25 to 0.50 cubic feet per second (c.f.s.). However, flow also stopped completely downstream of the point of observation.

General hydrology characteristics of the major watersheds are shown in Table 2-1. Much of the information is taken from the Event-Related Surface-Water Monitoring Report, Rocky Flats Plant: Water Years 1991 and 1992, EG&G, 1992.

Table 2-1
Drainage Hydrology at Rocky Flats

Drainage	Area (acres)	2-yr peak flow (cfs)	Volume (acre-feet)
Rock Creek at Highway 128	1,862	68	19
Walnut Creek at Div. dam	486	51	5
McKay Div Canal Outlet	550	28	5
Walnut Creek at Indiana Street	2,374	210	42
Woman Creek at SBDC	570	0	0
Woman Creek at Indiana Street	1,414	10	1

Source: EG&G (1992)

The broad Rocky Flats alluvial fan and underlying bedrock control watershed slope. Erosional forces have incised drainage swales which run generally from west to east. The alluvial fan has an approximate slope of 2.5 percent, but downcutting through it into the bedrock has increased local drainage slopes up to 5.5 percent. The upper reaches of these streams are incised only into the Rocky Flats Alluvium, but eastward most of the surface deposits are predominately valley fill and colluvium.

Walnut Creek. Runoff varies considerably from west to east along the drainage due to both natural and cultural influences. More runoff is generated on an area basis because 14 percent of the area is covered by impervious surfaces, and its middle and lower parts are mantled with finer sediments that retard infiltration. The upper or western part, however, is quite flat (two percent slope), has few drainage swales and channels, and has soils which allow rapid inifiltration. Storm and other runoff from the upper basin, including the western and northern edges of the industrial area, is diverted into a large channel (Walnut Creek Diversion) which bypasses the A and B series ponds. The middle Walnut Creek basin includes most of the industrial area, but the flow is highly regulated by the A and B series impoundments. Runoff from the industrial area, therefore, is eventually conveyed to Pond A-4, where the water is evaluated for quality prior to being discharged to Walnut Creek. Thus, there is normally no discharge from the B-series ponds into South Walnut Creek. Downstream from the ponds, the Walnut Creek Diversion, North and South Walnut Creek, and a few smaller drainages join to form Walnut Creek proper. At this point, about one-half mile west of Indiana Street, the valley widens and slopes become moderate in grade. While the stream is ephemeral, flows are of longer duration due to flows from the diversion channel as well as from pond releases. Flows within the tributaries above the A and B series ponds tend to be perennial or of longer duration due to various combinations of wastewater releases, seepage, or plant area runoff.

Woman Creek. This watershed drains the southern part of the plant site. It is nearly flat west of the buffer zone boundary but is dissected into three steep gullies near the west boundary. These drainages join south of the plant and are joined by other small drainages downstream along the southern edge of the industrial area. From these confluences downstream to the C-2 pond, the valley is generally narrow and moderately sloped. Below the C-2 pond, however, the valley becomes very broad and side slopes are gentle. In addition stream channel slope decreases and a meandering channel pattern develops.

Major sources of water to Woman Creek include flows from Antelope Springs, flows from Kinnear Ditch diversions upstream, irrigation return flow, releases from Rocky Flats

Lake via Smart Ditch, and leakage/spills from the South Boulder Canal. The reach from the Antelope Springs area to the C1 dam exhibited a steady flow during the study period, apparently sustained from the hillside springs. When diversions are authorized from Coal Creek, Kinnear Ditch releases provide small flows to the channel. This water is eventually diverted into Mower Ditch downstream of Pond C-2 or is conveyed to and stored at Standley Lake off site. Additional flow in the Smart Ditch drainage (from Rocky Flats Reservoir) is substantial but is diverted out of the Woman Creek drainage via a small ditch, where it is conveyed to Ponds D-1 and D-2, located in the Upper Big Dry Creek drainage. The South Interceptor Ditch receives runoff from the south part of the main plant and conveys it into Pond C-2 for storage.

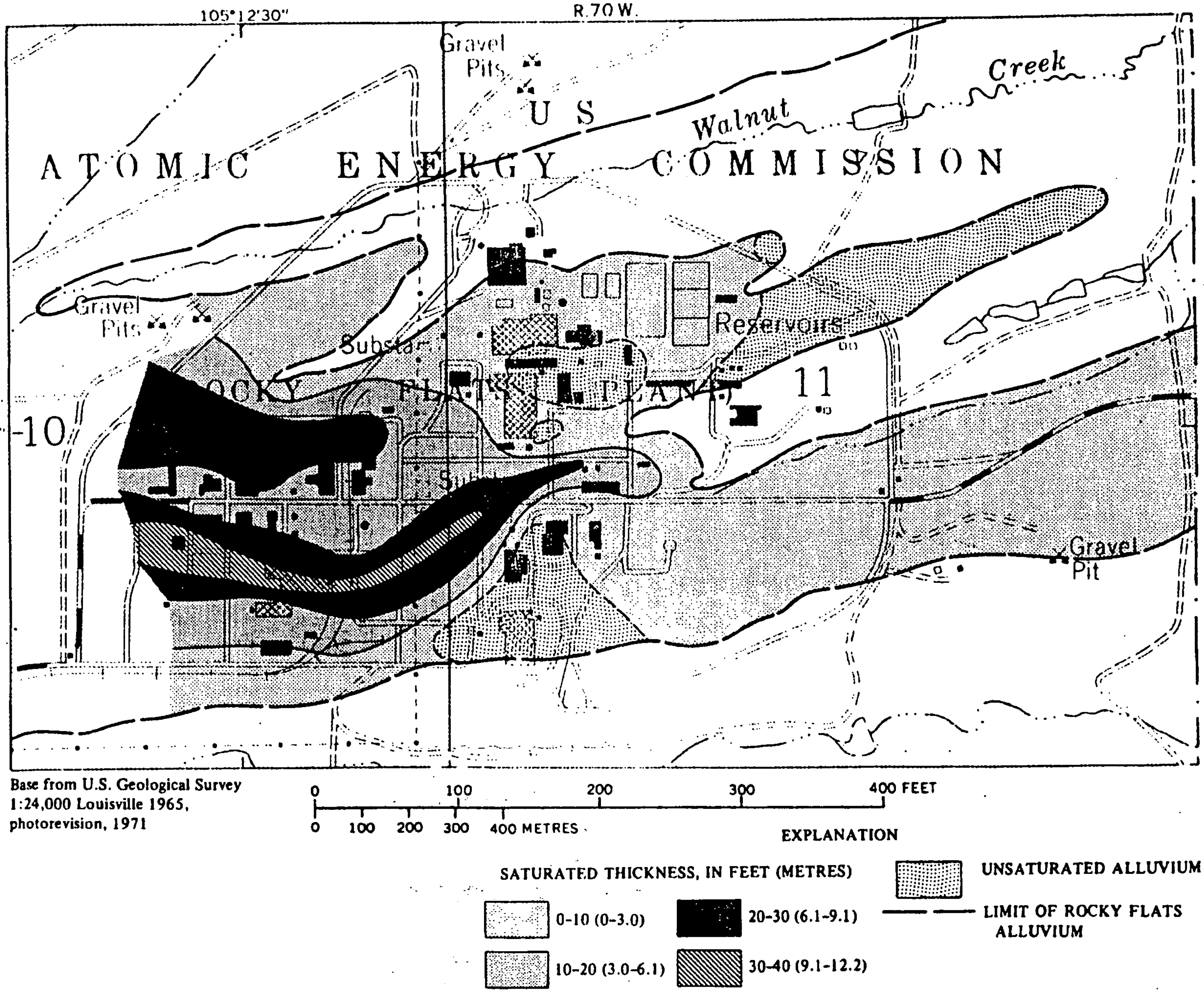
Rock Creek. While nearly flat in the headwater area, the drainage becomes deeply incised downstream. Erosion has proceeded below the cap of Rocky Flats Alluvium into the underlying bedrock formations. Surface runoff from the alluvium is limited because infiltration rates as high as 6 to 7 inches per hour (Hurr, 1976; Branson et al. 1964) have been documented. In the upper drainage, valley slopes are gentle, but these become steeper downstream. Grades from 40 to 50 percent are not uncommon and slopes may become unstable during wet periods. Several slide areas were noted, as evidenced by displaced strata, valley fill deposits, and vegetation formations. Near State Highway 128, the various subdrainages coalesce and the valley becomes wider, but slopes are still remain relatively steep. Surface flow in Rock Creek, in addition to runoff, includes discharges from a gravel mining operation located to the west, overland runoff, and flow from hillside and bank springs and seeps.

Small channel discharges were noted within the upper, larger Rock Creek subdrainages during the late summer and fall of 1994 due to spring and seep inflow; however, flow ceased downstream along the main stem due to evaporation and seepage losses. During storms or snowmelt, however, rapid runoff does take place due to steep slopes and finer nature of the valley fill deposits. In early November 1993, for example, a 6-8 inch snowfall rapidly melted over the basin. and contributed to a 1-2 c.f.s. discharge in the main channel. The main channel of Rock Creek contrasts sharply with the Woman Creek and Walnut Creek channels because it is wider, braided and mantled with a layer of very coarse gravel and cobble.

GROUND WATER HYDROLOGY

Ground water at the site is derived from Coal Creek, irrigation canal seepage and precipitation. Direct infiltration from Coal Creek, which flows 3-4 miles along the west and northwest contacts of the Rocky Flats Alluvium, is a major source since the stream bed at the exit of the Coal Creek Canyon is 200 feet above the surface of the alluvium at Rocky Flats. Direct precipitation may be another major source of ground water recharge because the alluvium is coarse and readily transmits water (EG&G, 1992). Movement of water within the alluvium is considered to be rapid, because the hydraulic conductivity is estimated at about 35 feet per day (Hurr, 1976). Direction of ground water flow appears to be controlled by local bedrock topography. Figure 2-5 shows the depth of saturated thickness of the alluvium in the vicinity of the industrial area. Data from other parts of the site are not available.

Infiltration into the Rocky Flats Alluvium from the water supply canals and ditches which border or cross the plant site may be locally significant. Leakage from the



Saturated thickness of the Rocky Flats Alluvium, Rocky Flats Plant.

Figure 2-5
(after Hurr, 1976)

South Boulder Canal into upper Woman Creek is likely the most substantial leakage source due to the large volumes of water conveyed and nearly continuous high flow (EG&G, 1992). Other sources include water-spreading on off-site hay and range land along the upper Woman Creek drainage, and spraying of sewage effluent during the mid 1980 period at the east and west spray fields areas. The latter application resulted in localized elevated water tables and initiation of a few seeps. This practice is no longer used because some of the effluent was entering ground and surface water (Hurr 1976; EG&G, 1992).

On site, infiltration from streamflow is limited to the beds and banks of streams and is probably minor in most drainages due to the ephemeral nature of flow and small channels. An exception would be in the vicinity of the reservoirs in Walnut and Woman Creek drainages, where contributions to the ground water below the dams are readily apparent.

Ground water typically escapes to the surface along the upper valley slopes. At these locations the pervious Rocky Flats Alluvium contacts the tighter bedrock formations, especially the Arapahoe Formation (EG&G, 1991). Because of exposure to erosion prior to deposition of the Rocky Flats Alluvium, the surface of the Arapahoe formation includes old flow channels and channel deposits. This paleo surface probably directs ground water to the various springs and seeps found along the valley slopes. Along the Rock Creek and Woman Creek drainages, seeps and springs are most pronounced between the upper, steeper slope (base of the Rocky Flats Alluvium) and the moderately sloping valley fill deposits. Often, the flow is small and percolates only into the valley fill deposits a short distance downslope and disappears. In some instances, however, greater volumes are generated, and the flow is conveyed through small channels downslope and eventually reaches the banks and beds of the main stream channel.

An annual cycle of ground water rise and subsidence in the Rocky Flats alluvium has been documented through analysis of well hydrographs (Hurr, 1976). In that study, over a 3-year observation period, water levels generally increased from March through June; well DP3-66 was observed to fluctuate 12 feet between a seasonal high in June and a seasonal low in May. Because of the high percolation rates, the study also demonstrated that water levels can fluctuate sharply in response to precipitation or surface irrigation. Water levels in well DP 1-66 responded to irrigation in 2 to 4 hours, increasing over 10 feet during the test period.

VEGETATION

The vegetation of the plant site contains some montane species, but mostly resembles the grasslands of the prairies and plains to the east. An early study by Branson et al. (1965) noted differences according to soil type. On stony soils tall-grass species, montane species, and mixed prairie species were found, but on shale or mudstone derived soils tall-grass species were absent and montane species were scarce. Improved moisture relations and warmer soil temperatures in the summer were considered to favor the tall-grass species on the stony soils. No factor other than moisture availability was suggested to account for the increase of montane species on the alluvium.

Since then, site vegetation has also received attention from University of Colorado scientists. Weber et al. (1974) stated that tall-grass prairie, short-grass prairie, ponderosa pine woodland, and foothill ravine habitats were present, but that all had been adversely affected by abusive land use practices. Clark et al. (1980) also noted the adverse effects of land use practices, but also found that since 1955 some recovery from overgrazing had occurred on some of the earlier federally acquired lands near the plant.

Vegetation mapping, based on composition and structure, moisture gradients, and disturbance variables was also completed by Clark et al. (1980). Sixteen vegetation mapping units were recognized, including major categories of dry prairie/pasture, savannah, barrens, scrub, low scrub, meadow, marsh, and streambank. The scrub (**Crataegus erythropoda-Galium aparine**), low scrub (**Symphoricarpos occidentalis-Poa compressa**), and meadow (**Agropyron trachycaulum-Poa compressa**) were considered to be moist habitats, while wet habitats included the marsh (**Carex nebraskensis-Juncus balticus**) and streambank (**Salix exigua-Barbarea orthoceras**) habitats. Marsh associated species reported included **Mentha arvensis, Galium aparine,** and **Cirsium arvensis,** while streambank associates included **Cirsium arvense, Nepeta cataria, Epilobium adenocaulon,** and **Polygonum convolvulus.** Mesic grasses, such as **Agropyron trachycaulum** and **Poa compressa** were associated with moist habitats, such as low scrub and meadow.

Most recently EG&G (1991) completed a vegetation mapping project on Rocky Flats site, utilizing 17 different cover types, including grassland, shrubland, woodland, and wetland habitats. Four wetland habitats were mapped. These consisted of wet meadow/marsh ecotone, short marsh (**Carex/Juncus**), tall marsh (**Typha/Scirpus**), and open water types. The woody vegetation types included bottomland shrub (**Salix/Amorpha**) and bottomland woodland (**Populus/Salix**). Large concentrations of natural meadows and marshes were mapped along the Rock Creek drainage and near the headwaters of Woman Creek in the Antelope Springs area. Bottomland woodland and shrub habitat were mapped mostly in the Rock Creek and Woman Creek drainages.

A few populations of rare plants have been found at or near the Rocky Flats plant site. A population of fork-tip three awn grass **(Aristida basiramea)**) has been located in mixed grassland along the upper Woman Creek drainage (EG&G, 1991). Potential habitat for the Ute Ladies'Tresses **(Spiranthes diluvialis)** exists in mesic and wet meadow areas on the site but survey findings have been negative to date.

FISH AND WILDLIFE

Since settlement, a few changes in the kinds and numbers of wildlife species have occurred. Large herbivores, such as bison, antelope, and elk, do not live in the area, but mule and white-tail deer are abundant. The large predators of the prairie, such as the gray wolf or grizzly bear, are also absent. However, there is a good population of coyote, and red fox also occur in the area. There have also been reports of occasional visits by mountain lions.

Smaller mammals found on site include those characteristic of the central Great Plains Region. These include the desert cottontail, white-tailed jackrabbit, striped skunk, long-tailed weasel, badger, muskrat, beaver, northern pocket gopher, thirteen-lined ground squirrel, deer mouse, harvest mouse, hispid pocket mouse, and meadow voles. A rare mammal at the site is the Preble's meadow jumping mouse **(Zapus hudsonius preblei)**, which reportedly is found within scrub-shrub habitat along stream bottoms.

Birds observed onsite include horned larks, mourning doves, vesper sparrows, and western meadowlarks. A variety of aquatic-dependent birds, including mallard duck, great blue heron, and red-winged blackbird, are observed near ponds. Raptors onsite include the red-tailed hawk, marsh hawk, ferruginous hawk, rough-legged hawk, and great horned owl (DOE, 1980).

Snakes living onsite include the prairie rattlesnake, bull snake, western plains garter snake, and eastern yellow-bellied racer. The western painted turtle and leopard frog live in several of the ponds found on Walnut Creek and some of the other larger drainages (DOE, 1980).

Because of limited water resources and suitable habitat for permanent development, fish communities are not well established. Flows are limiting in the streams, while turbidity, water fluctuations, and habitat structure are limiting in many ponds. Small populations of small fishes such as white sucker and creek chubs may be found in better watered parts of Woman Creek, while fathead minnows, largemouth bass, redside dace, sunfish, and rainbow trout have been reported in some of the ponds. It is possible that the streams provide spawning habitat for fish that live in downstream reservoirs such as Standley Lake or Great Western Reservoir, but this use has not been documented. Benthic invertebrates, including mayflies, caddisflies, crayfish, and sideswimmers have been reported in the ponds and in some of the streams. Some of the larger seeps have very productive populations.

CHAPTER 3 - STUDY METHODOLOGY

WETLAND CLASSIFICATION

The USFWS wetland classification method (Cowardin et al. 1979) was used for wetland characterization and mapping because it relies on many key attribute elements (especially vegetation) that can be easily obtained in the field, is used for National Wetland Inventory and can be adapted for most applications. In addition to vegetation, data on geomorophology, hydrology, substrate, and human influences can be assembled. During early stages of the study, consideration was given to use of a hydrodynamic wetland classification described by Brinson, 1993), which places more emphasis on wetland functunal dynamics than on vegetative characteristics. However, lack of historical records on site specific ground water flow, water table fluctuations, overland flow and channel flow precluded its use. In the present application, however, it is recognized that hydrogeomorphic factors (slope position, slope aspect and hydrology source) are significant for wetland functions. For this reason, hydrological and topographic information was obtained and recorded on separate spreadsheets (See Appendices B through E). Accordingly, the maps and spreadsheets should be reviewed together when examining the nature of a specific wetland or even the characteristics of a specific drainage basin.

The USFWS classification includes five major wetland systems, of which the riverine, lacustrine and palustrine systems are represented at the Rocky Flats site. From a numbers and areal perspective, Rocky Flats wetlands are mostly palustrine; e.g., vegetated or consisting of only small, open water bodies less than 8 hectare (ha) (20 acres) and 6.5 ft (2.0 m) in depth.

Riverine wetlands are found in natural or artificial channels, which periodically or continuously convey water. Levels of cover must be less than 30 per cent. Vegetated islands and banks of the stream are not included. In braided streams, the system is bounded by the banks forming the outer limits of the braiding pattern. Riverine habitat is very limited at Rocky Flats because of the headwaters location, ephemeral flow, and frequent presence of vegetation in the channel. The classification extended to the subsystem and class levels for riverine wetlands. Hence a small, open, stream channel subject to sporadic inflow from runoff would be designated as R4SBJ, where R represents the system (Riverine), 4 represents the subsystem (intermittent flow regimen), SB represents the class (streambed cover type) and J the water regime (intermittently flooded).

Palustrine wetlands are vegetated by trees, shrubs, persistent emergents, or floating/submerged plants. Wetlands lacking such vegetation are also included if they are less than 8 ha (20 acres) in size or have a depth less than 2 meters (6.5 feet) in the deepest part of the basin. Classification of palustrine wetlands extended to the subclass level so that more detail on vegetation could be provided. Thus, a stand of cattails growing on saturated but not flooded mineral soils would be designated as PEMB, where P represents the system (Palustrine), EM represents emergent (vegetation), and B represents the water regime (saturated). Stream channels are classified as palustrine wetlands if they contain more than 30 per cent vegetative cover. If more than 30 per cent of that cover is contributed by woody vegetation, the wetland is considered to be a scrub shrub or forested type.

Deepwater habitat was designated as L1UBH, where L represents the system (Lacustrine), 1 is the subsystem (limnetic), UB is the bottom type (unconsolidated) and H is the water regime (permanently flooded).

DELINEATION CRITERIA

Three main groups of criteria exist for delineation and characterization of wetlands. These include the use of hydrology, vegetative and soils indicators (Corps of Engineers, 1987). Generally, their use should be integrated whenever possible.

HYDROLOGY

This criterion is especially important in defining wetland-upland boundaries, but is also needed to assign water regimes under the Cowardin system. Useful data sources and field indicators include: historical surface water gaging data; well hydrographs; topographic contours; wet soils and surface water; drift/debris lines; presence of submerged plants, including algal mats and benthic algae; watermarks; drainage features (depressions, channels, rills, terraces); sediment deposits; animal tracks and trails; and ground surface pattern (tussocks and pits). Examination of several well hydrographs, although limited, was generally useful in that the data showed wide seasonal and year-to-year variations in the water table, and demonstrated that the seasonal low typically occurs in late summer and fall. Thus, the absence of soil saturation did not necessarily preclude the desisgnation of a site as a wetland.

In the field, no single soil or hydrologic criteria could be consistently observed or used as a wetland indicator because: (1) the field survey was conducted during the dry season (late summer and fall); (2) the period of sampling was preceded by a drier than normal spring and summer period; (3) site restrictions on soil excavation and sampling existed in some situations; and (4) the presence of claypan lenses and inclusions of gravel and cobble in the soil precluded effective soil sampling.

VEGETATION/PLANT INDICATORS

Certain plants are able to grow in water or in substrates that are saturated and often deficient in oxygen. These are known as hydrophytes. Other plants, while not growing in water, depend upon a seasonally high water table or are indicative of high ground water conditions. These plants are known as phreatophytes. Wetland indicator plants may be of either type, although wetland plants most typically possess structural or physiological adaptations which enable them to survive under long periods of water saturation or oxygen deficient conditions.

The USFWS has prepared a wetland plant indicator list (Reed, 1988). Wetland plants are divided into five indicator categories based on a species' frequency of occurrence in a wetland:

(1) Obligate - always found in wetlands (>99% of the time).
(2) Facultative wet - usually found in wetlands (66-99%).
(3) Facultative - sometimes found in wetlands (33-66%).
(4) Facultative Upland - Seldom found in wetlands (<33%).
(5) Obligate Upland - Almost always found in uplands (>99%).

Assignments of plants to these categories are made by regional panels of wetlands experts, providing regional assessments of indicator status by regions of the United States. The status list for the Central Plains (Region 5) was followed in this study (Reed, 1988). A list of plants found in wetlands during the field study at Rocky Flats, together with their indicator status, is provided in Appendix A.

Since indicator plants have assigned values, entire wetland communities can be characterized in terms of hydric status. An index averaging method (Wentworth and Johnson, 1986) is the most simple approach. It averages the indicator numbers for each major species in the stand. For example, stands with all obligates would have a value of 1, while stands having all facultative species would have a value of 3. Another approach to assessing hydric status is to use a weighted average approach, which also considers cover of each species. It is computed by the following formula:

$$Waj=(\sum_{i=1}^{p} IijEi/(\sum_{i=1}^{p} Iij)$$

where:

WA = weighted average for plot "j"
I = canopy coverage estimated for species "i"
E = NWI plant indicator rating for species "i"
p = the number of species occurring in plot "j"

Both methods of hydric value analysis were used in this study. The values, computed for the index averaging and the weighted averageing methods, respectively, are presented in the hydrophytic status column on spreadsheets within Appendixes B through E. For this study, in order to include non-vegetated wetlands in the hydrophytic index computation, key hydrologic indicators (algae mats, open water, mud, and scoured cobble and gravel) were assumed to be obligatory wetness indicators and assigned a value of 1.

HYDRIC SOIL INDICATORS

The USDA and the National Technical Committee for hydric soils have defined these soils as being saturated, flooded, or ponded enough during the growing season to develop anaerobic conditions in the upper part (USDA, 1991). This often enables the generation of hydrophytic vegetation. These wet soils may or may not be histosols (organic soils), but must have a water table within 18 inches of the surface during at least part of the growing season (usually 2 weeks or more). Surface ponding during the growing season is also an indicator of a hydric soil.

Indicators of hydric soils include: (1) presence of a predominately organic surface horizon (peat); (2) presence of an 8-16" histic epipedon near the soil surface; (3) absence of oxygen and presence of odors indicative of reducing conditions such as H_2S; (4) gleyed soil layers, such as bluish, greenish, or grayish colors; (5) bright mottles having reddish-brown hues; and (6) presence of iron and manganese concretions and iron plaques (ferrules) on root surfaces. A dark gray or black color in a surface horizon is not necessarily an indicator. Well-drained mollisols in northern latitudes are also often very dark in color due to accumulating humus.

Obtaining adequate soil samples at Rocky Flats was impossible at most locations because of numerous factors, including the hard, dry and rocky soil and various site disturbance restrictions. The soil disturbance permit was not obtained during early phases of the work within the Rock Creek watershed, and no soil disturbance in Individual

Hazardous Substances Sites (IHSS areas in the Walnut and Woman Creek drainages) were allowed due to safety considerations. In order to obtain information on soils underlying the seepage slope wetlands, however, a limited sampling effort was conducted. Representative soil pits were excavated on 27 October 1993 in Rock Creek and Woman Creek watersheds, with assistance from EG&G, SCS, and USACE personnel. Wetlands examined included those with temporary, seasonal, and saturated hydrologic regimes. In addition, several soil probe samples from various slope wetlands along the South Walnut Creek and Woman Creek drainages were also examined.

ASSIGNMENT OF HYDROLOGY REGIME

During the field survey, water regimes were associated with various wetland communities according to the code modifiers provided in Cowardin et al. 1979, and use of hydrologic, soils and plant indicators. Palustrine emergent (herbaceous) wetlands were assigned to a temporary, seasonal, or semi-permanent water regime, whereas palustrine aquatic bed wetlands were typically coded as permanent waters. Palustrine emergent (woody) wetlands were assigned to either a temporary or seasonal water regime, since they tend to disappear under wetter conditions and are replaced by herbaceous emergents. Palustrine unconsolidated bottom wetlands (ponds) typically were designated as seasonal, semipermanent or permanment. On site riverine wetlands are mostly intermittently flooded, although a few are considered to be nearly permanmently flooded (intermittently exposed), due to inflow from natural seeps or artificial sources.

Due to the frequent absence of conclusive hydrologic or soils data, assignment of water regimes to many slope and stream wetlands followed the plant indicator method used by

Stewart and Kantrud (1972) in the prairie pothole region. In general, wetlands dominated by shallow and deep marsh species were assumed to reflect semipermanent, permanent, or saturated water regimes, while a dominance of wet meadow/low prairie species reflected drier conditions. We also used baltic rush **(Juncus balticus)** stands as indicators in seepage slope wetlands, together with the presence or absence of microtopographic features such as tussocks, pitted surfaces and trail ruts.

INDICATOR USE OF BALTIC RUSH. Baltic rush stands were used not only because they were nearly ubquitous and readily observed on the landscape, but also because they change in structure, density, vigor and composition in response to moisture gradients. Dense stands often lodge and develop swirl patterns under high water table conditions; e.g., the cowlicks described by Bolen (1964), and are known to derive much of their water needs from the ground water table (Meyboom, 1967). While baltic rush can also utilize surface water and does occur in mixed species stands in uplands, it is believed that the tall, dense and lodged stands require longer periods of soil wetness. In this study, it was assumed that the upland-wetland boundary occurred when baltic rush comprised less than 30 percent stand cover. When stand cover levels reached 30 to 60 percent, and included mesic grasses (**Agrostis stolonifera, Poa pratensis, Poa compressa** and **Agropyron smithii**), and mesic forbs (**Cirsium arvense** and **Glycrrhiza lepidota**), the stand was assigned a temporary water regime. Typically, very low levels of obligate forbs or graminoids such as **Carex nebrascensis** were also present in these situations. A seasonal water regime in these stands was assumed when cover levels were greater than 60 percent and when the plants reached robust size and exhibited lodging. In these stands, other obligate and facultative species were present, but only at low levels. While the ground surface was dry in these stands, it was somewhat pitted and hummocky. Baltic rush stands were considered to reflect a saturated condition when the ground was soft, very pitted and hummocky and nearly 100 percent of the cover was comprised of baltic rush and other obligates.

Even though baltic rush is known to grow in a variety of geographic regions under varying altitudinal, soil, grazing, water quality and hydrologic conditions (Bolen, 1965; Ramaley, 1942; Cooper, 1992; Dix and Smeins, 1967; Hess, 1981; Meinzer, 1927; Meyboom, 1967; Mutz and Graham, 1982); Chapman, 1977), it is believed to exhibit moisture-sensitive stand attributes that can be used as indicators of soil wetness in more local areas. It has typical wetland plant morphological adaptations which include: (1) a wiry, pithy stem (probably abundant aerenchyma tissue) and (2) a dimorphic root system (thick rhizomes, tap roots and finer, fibrous roots) and highly reduced leaves. Also, like the alders which fix gaseous nitrogen, the rushes (**Juncus**) have similar abilities which allows them to thrive in nitrogen deficient environments. Field studies of baltic rush in wet meadows have confirmed it uses copious amounts of shallow ground water. Levels of water consumption range from up to 7.8 acre-feet per acre in southern California (Young and Blaney, 1942) to 1.9 acre-feet per acre reported in Saskatchewan, Canada (Meyboom, 1967). The latter study documented diurnal changes in the water table of 0.15 feet in August, and cessation of water table fluctuation after advent of dormancy in mid-September. Dix and Smeins (1967) found baltic rush to be associated with a wide variety of low prairie and wet meadow plants and indicated it tolerates a widely fluctuating water table.

At Rocky Flats baltic rush occupied sites along a broad environmental spectrum; e.g., varying in water regime from flowing waters to mesic hillslopes, and varying in grazing intensity from light to heavy. On sites distant or at least peripheral to active seeps, the water table under the stand was observed to be far below 18 inches. These stands appear to tolerate periodic "droughts," possibly because of physiologic water conservation measures or the ability to withdraw water under moderately high soil moisture tensions (Bolen, 1964). A few stands at Rocky Flats are found on upland grassland sites close to areas of irrigation canal or pipeline seeps.

OTHER SPECIES INDICATORS. In many slope positions contiguous to or separate from baltic rush stands, the clustered field sedge (**Carex praegracilis**), a facultative species, developed dense, near monotypic stands. These were also considered to reflect temporary hydrologic conditions. Similarly, dense stands of **Agrostis stolonifera**, when these occurred in stream channels, banks and lower slopes, were also mapped as temporary wetlands.

DELINEATION UNCERTAINTIES

Because of sampling and other study limitations, simplifying assumptions were necessary to determine the presence or absence of wetland hydrology and soils at sites designated as temporary wetlands.

HYDROLOGIC INDICATORS

In areas of stream channels or depressions, and in the springs and seeps, there are usually numerous reliable hydrologic indicators of the duration or permanence of the water; however, these may be absent in the drier areas peripheral to seeps and springs, where water levels fluctuate widely seasonally and from year to year. The period of observation coincided with the late summer-fall period when water tables would be expected to be lowest. A further complicating factor is the possible presence of perched water tables, because some soils have clay pans underlying the surface horizon which can retard the downward percolation of moisture. Thus, because of the limited opportunity to observe vertical water table fluctuations at wetland sites, it was necessary to utilize species composition and structure of plant communities along with limited microtopographic/soils data to decide on the presence or absence of suitable hydrology.

SOIL INDICATORS

Soil indicators were often found to be unreliable as indicators of wet or hydric soils. In the Rock Creek watershed, soils within seeps did not exhibit odors or evidence of reducing conditions, although they were saturated to the surface. A depression at the base of an old landslide (Rock Creek, Trib. F, wetland 2j) was dominated by seasonal wetland vegetation (**Eleocharis** sp.), but the very dark gray and deep surface soil horizons exhibited no sign of reducing conditions (see Table 4-3 in Chapter 4). It appeared that soils in the seepage wetlands are oxy-aquic; e.g., remain continually aerated due to high flow rates. On the other hand, soils on similar topographic sites occupied by temporary and seasonal wetland vegetation in the Woman Creek and Walnut Creek watersheds exhibited mottling in the upper 10 inches of soil, although the zone of saturation was below this level.

PLANT INDICATORS

It can be argued that plants are reliable hydrologic indicators since a wetland plant community actually represents a historical time-series of water level events. However, hydrological response data on many wetland plants are not readily available. The indicator status of many of the wetland plants on the national list (Reed, 1988) for the Central Plains Region are also not well verified. A recent study in the prairie pothole region recommended (Hubbard et al. 1988) the following changes in plant indicator status: (1) Baltic rush from obligate to facultative; (2) Canada thistle from facultative upland to facultative; (3) smooth brome from facultative upland to facultative; and (4) Kentucky bluegrass from facultative upland to facultative. While these unofficial recommendations were not adopted for this study, there are physiological/structural questions that need to be resolved about the indicator value of baltic rush and other species found in wetlands.

FIELD SURVEYS AND MAPPING PROCEDURES

FIELD SURVEYS

Wetlands were systematically characterized through field surveys within each watershed (Figure 4-1). In general, delineation surveys proceeded in a downstream direction; however, this was not always practicable so in some situations the numbering system proceeds upstream. Minimum sample size was 10 feet.

Wetland locational and attribute data were obtained during several trips to the site: August 25 to September 2; September 22 to October 1; and October 26 to November 2.

Survey efforts on the last trip were hampered considerably by a snowstorm and resultant heavy snow cover which persisted for several days.

During the surveys, each wetland was observed by at least two persons. One individual was equipped with a Trimble Pathfinder Prolite Global Positioning System (GPS) in order to capture spatial and locational data, while the other individual characterized the wetland community. The GPS recorder continuously captured point data from satellites, but some attribute data was also recorded in the recorder (drainage, wetland number, type and water regime). In order to be able to later correct the satellite data, base station data was also captured from a second Pathfinder receiver set up at the Wind Energy Site, and from another base station operated by the Bureau of Land Management (BLM) at Canon City, Colorado. Field and base station data were collected generally from about 8 a.m. to 6 p.m.

During the field survey, the boundaries and sizes of larger wetlands were determined by one observor equipped with the GPS receiver. Lineal and point data were also taken to ascertain and delimit the areas and positions of the smaller wetlands. The other observor recorded site information; e.g., the type and amount of wetland plant cover, the landscape position, presence or absence of various indicators, and often made sketches of wetland locations in reference to important landmarks.

DATA PROCESSING

Base station data were referenced to the known coordinates of the base station. This data was then used to correct the field survey data, a process which derives the highest degree of accuracy possible for the type of GPS system used. The corrected files were then converted for use in the Arc/INFO GIS system and transferred from the PC to a SUN workstation.

The spatial data required intensive editing. The GPS collects data in polygonal format, while the GIS requires arc-node topology. In order to use the data in the GIS system, it was necessary to edit the linework in areas where wetland polygons overlapped. In the polygonal format, each wetland polygon is a distinct feature. When arc-node topology exists, adjacent polygons share common boundaries (arcs). This is a more efficient and intelligent method of data storage which makes GIS analyses possible. Attributes (drainage, wetland no., and wetland type) that had been assigned during field data collection were also rechecked during the spatial editing process.

USE OF ANCILLARY DATA

Occasionally, errors in the GPS data occurred and additional information was utilized to help determine accurate wetland locations. When boundaries overlapped to such a degree that significant editing was necessary, infrared aerial photographs, ground photographs, previous wetland maps, and field drawings were used to more reliably portray wetland locations. Some of these data sets are more accurate than others and were used accordingly.

INTEGRATION WITH OTHER GIS DATA SETS

Spatial data for other site features were obtained from the Environmental Restoration Division of EG&G. This included buildings, fences, surface geology, hydrology, railroads, dams, roads, and elevation contours. The buildings, fences, dams, hydrology, roads, and contours were used as a backdrop to assist in editing the wetland data. Each of these layers was either obtained from DXF files or an unknown source. The scales of these layers were unknown and their intended use was for reference or base maps. When plotted at the scale requested for this project (1:2400), several layers became quite coarse.

ACCURACY AND RELIABILITY

Accuracy of the wetland spatial data varied according to the feature type. Polygon and line features were recorded as a series of points and have an accuracy range of within 10 to 15 meters after differential correction. Point features were recorded as the average of a group of points while standing stationary at the desired location. Points have an accuracy range of about 2 to 5 meters. Whenever possible, point features were recorded to maximize positional accuracy.

The GIS data layers from EG&G were often used to help orient wetlands. However, due to the uncertainties in the accuracy of the EG&G data, the field spatial data were not always assumed to be less reliable. In wetlands where the predominant sources of locational data were points, more confidence was placed in the accuracy of the field data. Where polygons were recorded, wetlands were generally oriented to follow the hydrology layer.

MAP LAYOUT AND FORMAT

The Rocky Flats site was divided so that it would be covered by nine map sheets. Each sheet displayed a portion of the site at the requested scale of 1 inch equals 200 feet (1:2400). A title, legend, north arrow, sheet index, and bar scale were plotted on each map. Digital data obtained from EG&G for hydrology, topographic contours, roads, buildings, and fences are displayed for reference and as ancillary data. Stateplane coordinates were added to the margins for geographic referencing. Each wetland type (code) under the Cowardin classification was provided a special color and plotted accordingly. Special modifiers for the code, reflecting any past wetland modifications, were not added due to space and other mapping limitations. However, these are added to the code within the spread sheet displays found in the appendices. To facilitate concurrent and efficient use of both the maps and spreadsheets, each watershed (with all of the included wetlands) was provided a code name and spatially outlined on the maps with dashed lines.

A composite map of the entire site was also developed at an approximate scale of 1 inch equals 600 feet. This map is useful for examining general wetland distributional patterns, but is not sufficiently detailed for planning purposes.

CHAPTER 4 - STUDY FINDINGS

GENERAL WETLAND DISTRIBUTION

Palustrine emergent wetlands are the most common wetland type on site. The largest complexes occur on hillslopes of the Rock Creek and Woman Creek drainages. Smaller complexes occur in the Walnut Creek drainage. Palustrine scrub wetlands are also abundant on the site but comprise considerably less area. These are located mostly along the streams of the Rock Creek, Woman Creek, and upper Walnut Creek drainages. Smaller areas have developed in the upper pool zone within many of the impoundments. Forested wetlands are most commonly found along Woman Creek, but a few stands are present in the Walnut Creek and Rock Creek drainages. Open-water palustrine and deep water habitats (ponds) are most common in the Walnut Creek drainage, but occur elsewhere where the streams have been impounded. Aquatic bed habitat has developed in several of the ponds which have more permament water levels.

Riverine habitats are very limited and basically intermittent, although some limited segments exhibit signs of more permanent flow/inundation. Short riverine reaches exist along Woman Creek (also Smart Ditch drainage), Walnut Creek, and some upper segments of Rock Creek. The longest reach of riverine habitat was found along the lower channel of Rock Creek. This channel was wide, braided and contained considerable gravel and cobble.

Lacustrine or deep water habitat exists behind some of the larger dams on the Walnut and Woman Creek drainages. Larger or more expansive areas are present in off-site water supply reservoirs, especially Standley Lake and Great Western Reservoir.

WATERSHED HYDROLOGIC FACTORS

Contributing area, elevation or position in the watershed, slope, soil infiltration rate, connectivity of valley fill deposits with water bearing parts of the Rocky Flats Alluvium and Arapahoe formation, proximity to water supply ditches, and presence of dams and diversion ditches are important factors which influence wetland distribution, size, and quality. Secondary factors relate to vegetative cover, microtopographic features, and land use in the contributing watersheds.

The location of various watersheds and drainages surveyed are shown in Figure 4-1. The number and acreage of various wetland types found in each of these areas are found in Table 4-1. Wetlands on the valley slopes and stream channel areas are listed separately because of significant hydrologic and ecological differences. Wetlands along the streams are influenced by seasonal pattern and amount of channel flow (often spiked), overbank and channel seepage, and channel morphology, while those on the open slopes are primarily affected by seasonal and year-to-year ground water recharge and gravitational movement of this water in response to site specific geological and topographic controls. Table 4-2 summarizes stream and slope wetlands for the entire site as well as for each major watershed. While the number of wetlands identified is large (nearly 1100), the total acreage (191) is only a small part of the land area at Rocky Flats.

Figure 4-1

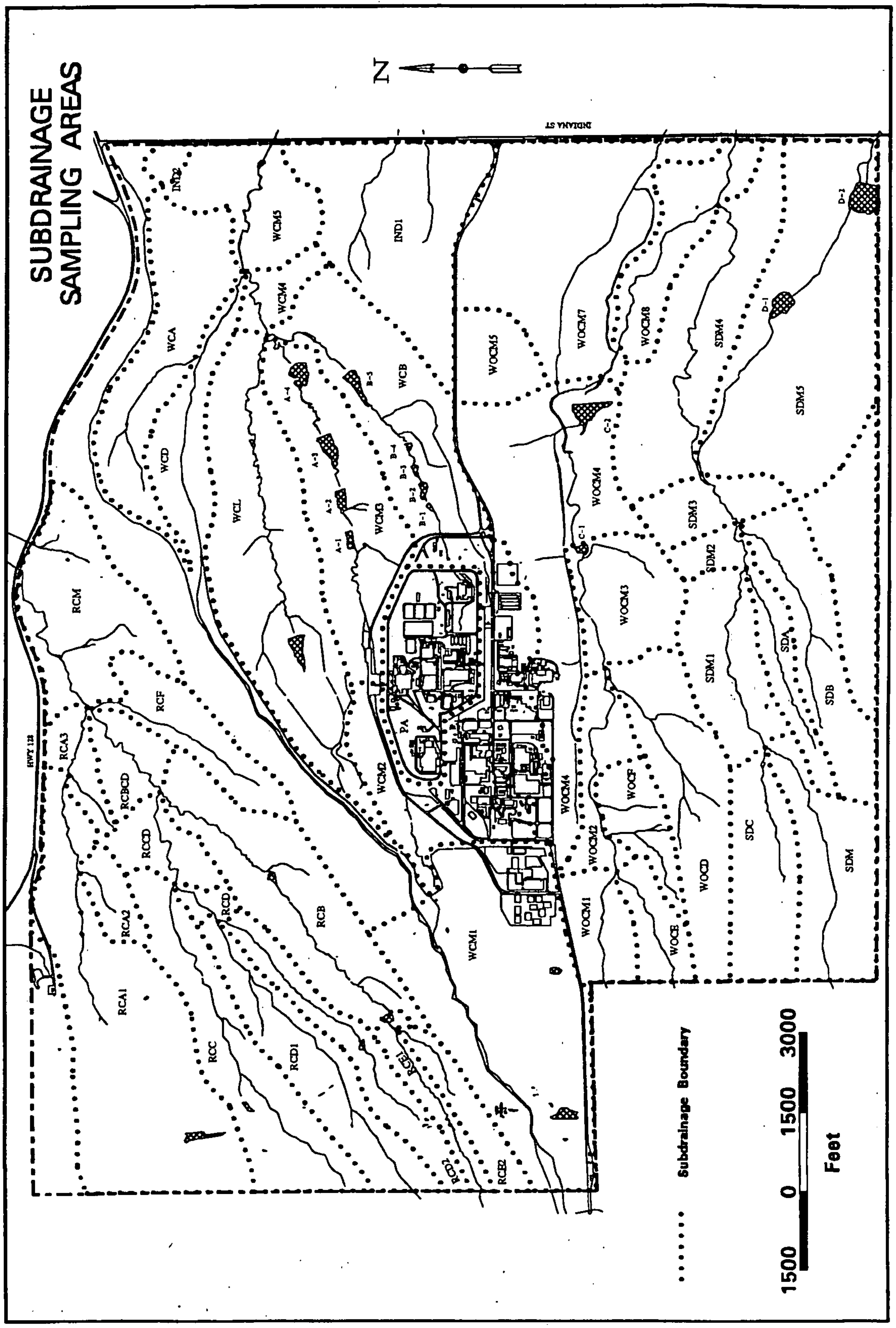


Figure 4-1

TABLE 4-1	ROCK CREEK WETLAND/DEEPWATER HABITAT INVENTORY BY SUBDRAINAGE, TYPES AND TOPOGRAPHY																			
	CHANNEL / OVERBANK								NORTH ASPECT						SOUTH ASPECT					
					PSSA/		R4SB/L1UB				PUBF/PABH									
Watershed/	PEMA/PEMC		PEMF/PEMB		PSSC/PFOC		PUB/PAB		PEMA/PEMC		PEMF/PEMB		PSSC		PEMA/PEMC		PEMF/PEMB		PSSC		TOTALS	
Drainage	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.
Rock Cr.																						
A1	12	2.45	4	0.33			1	0.17	2	0.21	1	0.42			7	0.18					28	3.76
A2	1	0.12	2	0.05																	3	0.17
A3	1	0.13																			1	0.13
C	3	0.32	2	0.30	1	0.5									3	0.50	4	0.95	1	0.15	14	2.72
CD									4	0.13	3	0.26			1	0.60	1	0.40			8	1.39
D	1	0.25	1	0.12	2	0.53			3	0.85											7	1.75
D1	2	0.11	2	0.11	4	0.40	1	0.01													7	0.63
D2	14	2.01	2	0.37			15	0.84													31	2.46
E1	6	2.29	1	0.03	1	0.02	15	0.38													23	2.72
E2	1	0.92	5	0.04			7	0.01													13	0.97
B	5	1.77	7	1.30			6	0.21	1	1.37					3	1.62					22	6.27
(Mainstem above LR)																						
B	6	0.49	4	3.60	2	0.40	3	0.52	27	8.43	8	2.90			11	1.48					61	17.82
(Mainstem below L.R. to Trib. F)																						
Trib F Plus	3	0.14	11	0.28	2	0.06	2	0.01	59	9.28	11	2.28	2	0.16							92	12.22
RCM Slope Wetlands																						
																					1	1.49
BCD Main Channel					1	1.49																
																					4	3.05
RCM Main Channel (below ABCDF Confl.)					2	0.48	2	2.57														
TOTALS	55	11.00	41	6.53	15	3.88	52	3.96	96	20.27	23	5.86	2	0.16	25	4.38	5	1.35	1	0.15	315	57.55

1/ Blank areas indicate the absence of that wetland type; LR=Lindsey Ranch

TABLE 4-1	WOMAN CREEK WETLAND/DEEPWATER HABITAT INVENTORY BY SUBDRAINAGE, TYPE AND TOPOGRAPHY																							
	CHANNEL / OVERBANK								NORTH ASPECT						SOUTH ASPECT									
					PSSA/		R4SB/L1UB																	
Watershed/	PEMA/PEMC		PEMF/PEMB		PSSC/PFOC		PUB/PAB		PEMA/PEMC		PEMF/PEMB		PSSC		PEMA/PEMC		PEMF/PEMB		PSSC		TOTALS			
Drainage	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.		
M1	1	0.002			3	1.68			8	0.49	4	0.52									16	2.60		
WOCE	6	0.85	3	0.59					13	0.80	3	0.33									22	2.57		
WOCF									18	6.08	4	5.73									22	11.81		
WOCD			7	1.09	1	0.05	2	0.19	21	4.49	4	6.43									35	12.25		
WOCM2	2	0.29	3	0.17	10	3.28			6	0.59											21	4.33		
WOCM3	2	0.06	3	0.25	10	1.86	2	0.80							2	0.11	2	0.19			21	3.27		
WOCM4	11	1.66	3	0.59	7	1.77	2	3.89													23	7.91		
South Inter-ceptor Ditch	4	3.39	1	0.34																	5	3.73		
WOCM5	2	0.05																			2	0.05		
WOCM7	6	0.34	1	0.02	8	1.42															15	1.78		
WOCM8	9	0.54			23	4.76	3	0.05													35	5.35		
TOTALS	43	7.18	21	3.05	62	14.82	9	4.93	66	12.45	15	13.01			2	0.11	2	0.19			217	55.65		

TABLE 4-1 SMART DITCH WETLAND/DEEPWATER HABITAT INVENTORY BY SUBDRAINAGE, TYPE AND TOPOGRAPHY

	CHANNEL / OVERBANK								NORTH ASPECT						SOUTH ASPECT							
					PSSA/		R4SB/L1UB															
Watershed/	PEMA/PEMC		PEMF/PEMB		PSSC/PFOC		PUB/PAB		PEMA/PEMC		PEMF/PEMB		PSSC		PEMA/PEMC		PEMF/PEMB		PSSC		TOTALS	
Drainage	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.
SDM	3	0.25	18	1.59	2	0.10			1	0.04					3	0.08	1	0.05			28	2.11
SDM1	7	0.68	17	0.92	15	0.77			1	0.13	1	0.18	1	0.06	2	0.05	1	0.02			45	2.81
SDC	9	0.52	6	0.24			4	0.19													19	0.95
SDA	8	0.24																			8	0.24
SDB	10	1.09	5	0.48					2	0.02											17	1.59
SDM2	1	0.18	5	0.40	2	0.06	1	0.01													9	0.65
SDM3	3	0.12	1	0.01	6	0.77	3	0.01													13	0.91
SDM4	14	0.95	3	0.06	20	2.36	4	0.03	3	0.73	1	0.03									45	4.16
SDM5	23	5. 20	8	1.39	2	0.08	4	9.51													37	16.18
TOTALS	78	9.23	63	5.09	47	4.14	16	9.75	7	0.92	2	0.21	1	0.06	5	0.13	2	0.07			221	29.60

TABLE 4-1 WALNUT CREEK WETLAND/DEEPWATER HABITAT INVENTORY BY SUBDRAINAGE, TYPE AND TOPOGRAPHY

	CHANNEL / OVERBANK								NORTH ASPECT						SOUTH ASPECT							
Watershed/	PEMA/PEMC		PEMF/PEMB		PSSA/ PSSC/PFOC		R4SB/L1UB PUB/PAB		PEMA/PEMC		PEMF/PEMB		PSSC		PEMA/PEMC		PEMF/PEMB		PSSC		TOTALS	
Drainage	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.	No.	Ac.
Plant Prot. Area	3	0.09	6	0.40			1	0.01			1	0.01			1	0.07	1	0.06			13	0.63
WCM1	7	0.22	1	0.04	13	0.66	7	1.12													28	2.04
WCM2	5	0.28	8	1.27	11	0.96	2	0.39	2	0.37			1	0.28	7	0.47	3	0.54	1	0.28	40	4.84
WCM3	7	3.10	9	0.71	18	3.17	4	7.95	1	0.07											39	15.00
WCB	21	2.25	6	0.76	8	0.30	11	4.45	24	5.88	1	0.03									71	13.67
WCL	18	1.89	1	0.46	2	0.08	1	2.26													22	4.69
WCA	27	1.56	1	0.08			1	0.01													29	1.65
IND1 & 2	13	0.79	3	0.15																	16	0.94
WCD	3	0.03	18	1.81	19	0.95	4	0.05													44	2.84
WCM4	9	0.19			3	0.07	1	0.15													13	0.41
WCM5	11	0.32			8	0.64	9	0.47													28	1.43
TOTALS	124	10.72	53	5.68	82	6.83	41	16.86	27	6.32	2	0.04	1	0.28	8	0.54	4	0.60	1	0.28	343	48.14

Table 4-2
Watershed Wetland Summary

Watershed	Landscape Position: Stream No.	Stream Acreage	Slope No.	Slope Acreage	Total No.	Total Acreage
Rock Creek	163	25.37	152	32.17	315	57.55
Woman Creek	135	29.98	85	25.76	220	55.74
Smart Ditch	204	28.21	17	1.39	221	29.60
Walnut Creek	300	40.08	43	8.06	343	48.14
Totals	802	123.64	297	67.38	1099	191.03

SLOPE WETLANDS

Only a few wetlands near the heads of small drainages to Woman Creek or Rock Creek exist on the gently sloping surface of the Rocky Flats Alluvium. Slope wetlands are best developed along the steeper slopes of the drainages. The saturated and most of the seasonal slope wetlands are supported in water regime by ground water sources. Temporary wetlands may be relatively more dependent upon surface water (runoff and infiltration from snow drift meltwater or precipitation).

Mass wasting, especially slides, has extensively affected the slope morphology along the main stem of Rock Creek and subdrainages F and C (Figure 4-2). Slope instability at these sites have recently been described and mapped by Shroba and Carrara, 1994), including a description of likely slide mechanisms. The large slides observed in this area were likely triggered during a past wet period, and could date from a few decades to several hundreds of years ago. It was also noted that some of the slides superficially resemble solifluction slopes, described for mountainous subalpine/alpine areas in the Front Range (Windell et al. 1986), because both downslope curvilinear toes (terraces) and depressions were observed. The latter features collect considerable surface water, and exhibit

Figure 4-2

surface water and ground water fluctuations typical of depressional wetlands more characteristic of the Prairie Pothole Region. Shallow to deep flooding occurs in these areas, depending upon the depth of the basin and amount of runoff. Wetlands 2j and 2g in the Rock Creek drainage exhibited these features. At times wetland 2g supports crayfish and other invertebrate production.

The largest, best watered, and most diverse of the slope wetlands are located in the Rock Creek and Woman Creek watersheds. On the former they are common along the C, D, and F drainages and along the main stem, while on Woman Creek they occur in the D and F drainages. The seep or discharge points are typically located along the upper valley edges where the base of the Rocky Flats Alluvium and upper Arapahoe formation have been exposed by stream downcutting. This can be easily detected by the sharp gradient change from the upper to middle slopes, often from 10 to 40 feet below the surface of the Rocky Flats alluvium, or by noting sharp changes in vegetation. Drainage D on Woman Creek is locally known as Antelope Springs; this area has developed extensive marshes and an outlet channel due to the high sheet flow from several seeps. Another very active seep occurs on Rock Creek (wetland 2n on drainage F), which at one time was part of a livestock watering facility. This seep generates an extensive sheet flow and supports a large, marshy complex. Outflows eventually discharges downslope to the channel bank where it cascades abruptly into the stream, providing near perennial flow.

Seasonal variation of seepage into these wetlands from the contributing aquifer has not been defined nor has the amount of flow been determined. Presumably, seepage is highest in spring to early summer when water tables are higher and evapotranspiration is relatively low. Flow through these systems appears to be relatively rapid; seepage was observed into small soil pits, but water did not pond in the bottom. This is not unexpected because of the coarse nature of the valley fill deposits and the high hydraulic heads and high pore velocities. Besides variations in seep activity and fluctuation of ground water levels, other factors may also affect water ponding or movement on the slope wetlands. These include microtopographic features, and especially the formation of ice cover and possibly ice dams within the small outlet channels found downslope of many of the more active seeps. These would influence slope areas flooded and duration of flooding and saturation.

STREAM BOTTOM WETLANDS

Wetlands along the drainage bottoms varied greatly in water regime. Location in the drainage, channel shape, channel substrate, off-site and on-site flow regulation, streamflow obstructions, flow seasonality, flow duration and total annual flow are all important influences. In general, wetlands are more structurally diverse and productive in channel areas subject to relatively steady water levels related to natural or man-made regulation. These situations generally are found where: (1) channels receive discharge from slope and bank seepage; (2) spills or wastewater enter channels; and (3) natural channel configuration or modification results in flow ponding.

Wetlands in the upper drainage valleys are mostly temporary and seasonal, occupying shallow swales, scour holes and very narrow and shallowly incised channels. In some shallow drainages, as within the upper drainages of Rock Creek, numerous scour holes have formed in the channel, varying in diameter from a few feet to over 30 feet and in depths up to 5 feet. In water regime these vary from temporary to semipermanent, and they also vary in terms of vegetative cover.

Riffle and pool habitat in stream channels is found along the middle reaches of the Rock Creek drainage, and seasonal to irregularly exposed (nearly permanent) water regimes are typical. In some drainages (A1 and B), small, constructed embankments have created small pools and ponds. Along drainage F, unstable slopes have restricted the channel cross section in some areas; in addition, several small overfalls (nikpoints) exist in the channel. The lower part of the Rock Creek channel is much different than the middle and upper reaches. It is highly braided, has large amounts of cobble and gravel, deposits, and has an irregular (temporary) flow regime. It provides mostly open riverine wetland habitat and scrub-shrub wetlands.

Pool and riffle habitat (irregularly exposed and semipermanent water regimes) also occurs along the upper and middle portions of the Woman Creek drainage. These reaches support a wide variety of wetland types (Figure 4-3). Several impoundments and diversions also exist along the channels. Flow losses occur in a downstream direction within the lower Woman Creek (including the Smart Ditch drainage) watershed because of diversions into Mower Ditch, diversions from pond C-2, diversions to ponds D-1 and D-2, and channel evapotranspiration losses. As a result, the stream wetlands below these structures are mostly temporary in hydrologic regime. The C and D series ponds, however, generally support a variety of wetlands, including some deepwater habitat and vari^us permanent, semipermanent, seasonal, and temporary hydroperiods.

As previously indicated, Walnut Creek runoff is largely regulated by various dams and diversion structures. Flow in

Figure 4-3

South Walnut Creek below the B-5 pond is diverted to the A-4 pond, which has resulted in some dewatering of seasonal and permanent wetlands below the dam. However, most of the A and B series ponds support zones of different wetland types around the open water area. The main channel of Walnut Creek below the confluence of the Walnut Creek diversion canal to Indiana Street is such that water is pooled for longer periods of time, resulting in somewhat wetter water regimes and a greater variety of wetland types.

VEGETATION CHARACTERIZATION

The communities of slope and stream wetlands share some similarities, but typically contrast in terms of botanical composition and structure. Numerous hydrologic, geomorphic, and soil factors contribute to these differences. This section describes and contrasts these systems.

SLOPE WETLANDS

A complex mosaic of wetland types are found within and adjacent to seep areas on the valley slopes. A typical mosaic consists of contiguous, intergrading communities, consisting of temporary, seasonal, and saturated water regimes, and varying in structure and composition from wet meadow to marsh vegetation.

These seep complexes are typically found at the gradient break between the upper and lower valley slopes. The wettest parts are usually in the center of the complex or near its upslope edge. Saturated areas, sometimes covered with with shallow standing water, are dominated by only a few graminoid species such as baltic rush, Nebraska sedge, or broad leaf cattail. Torrey's rush (**Juncus Torreyi**), spike rush (**Eleocharis** sp), and green bulrush (**Scirpus pallidus**) were often present in lesser amounts.

Rivulets of flowing surface water at times supported beds of watercress (**Nasturtium officinale**) or duckweed (**Lemna** sp.). Commonly associated native broadleaf species, sometimes attaining dominance of up to 50 percent, include swamp milkweed (**Asclepias incarnata**), field mint (**Mentha arvensis**), water horehound (**Lycopus americanus**), fringed loosestrife (**Lythrum ciliata**), willow herb (**Epilobium ciliatum**), blue vervain (**Veronica hastata**), winter cress (**Barbarea orthoceras**), and wild bergamot (**Monarda fistulosa**).

Seasonal wetlands are typically located downslope or lateral to the saturated wetlands. While they may be saturated to the surface seasonally, they usually do not contain flowing or ponded water, and may be dry in late summer and fall. They are dominated by Nebraska sedge, baltic rush, broadleaved cattail, Torrey' rush, and spike rush. Many of the above obligate wetland forbs are present but at reduced levels with the exception of wintercress, which was often very abundant. Small amounts of Mexican dock (**Rumex mexicanus**), Canada thistle, red top (**Agrostis stolonifera**), and cordgrass (**Spartina pectinata**) were often present. Cowlicks, or swirled, lodged stands of baltic rush, are also considered seasonal, and contain small inclusions of Nebraska sedge and a few species of obligate forbs.

Temporary wetlands are often located downslope or peripheral to a saturated or seasonal wetland. Occasionally they connect the saturated wetland complexes of the upper/middle slopes to the overbank wetlands next to stream channels. These wetlands are usually dominated by Baltic rush, followed by lesser amounts of grasses such as red top, western wheatgrass, slender wheatgrass, Kentucky bluegrass, and Canada bluegrass. Occasionally, clustered field sedge

(Carex praegracilis) or inland rush **(Carex interior)** or cordgrass are present as adjacent patches or inclusions. Small shrubs and forbs sometimes found at low levels include wild prairie rose (**Rosa arkansana**), snowberry **(Symphoricarpos occidentalis)**, wintercress, Mexican dock, wild licorice (**Glcyrrhiza lepidota**), showy milkweed **(Asclepias speciosa)**, white prairie aster (**Aster ericoides**), white sage (**Artemesia ludoviciana**), and western ragweed **(Ambrosia psilostachya)**. Common invaders include Canada thistle and St.Johnswort (**Hypericum perforatum**). Were it not for the conspicuous and dominating presence of the baltic rush, these stands resemble mesic prairie grasslands. Frequently, small stands of baltic rush were isolated; e.g., not part of a larger seep complex.

Details on species occurrences and cover characteristics within each of the slope wetlands are included in Appendices B-E.

STREAM BOTTOM WETLANDS

Palustrine wetlands associated with stream channel and bank areas include forested and scrub shrub (woody) types (PFOC, PFOA, PSSC and PSSA), herbaceous types (PEMB, PEMF, PEMC, and PEMA), and aquatic bed (PAB) type, and unconsolidated bottom types (PUBC, PUBF, and PUBH). The aquatic bed and unconsolidated bottom types are typically associated with artificial impoundments, excavated basins or stream pools. Riverine wetlands are generally designated as stream bed types with an irregular flow regime. These are largely confined to the extreme upper drainages of Rock Creek, the lower part of Rock and Woman Creek, and to the upper and lower parts of Walnut Creek. In some stream segments the hydric status was upgraded to seasonal or irregularly exposed where hydrologic indicators suggested wetter conditions.

Forested wetlands occupy a few stream segments and are typically dominated by plains cottonwood (**Populus deltoides**) or narrow-leaf cottonwood (**Populus angustifolia**). However, a reach on Walnut Creek above the A pond series supported a stand of peach leaf willow (**Salix amygdaloides**), while Woman Creek between drainage E and the C-1 pond supported some white poplar stands (**Populus alba**). Also, some hybrid cottonwoods (**Populus acumunata**) and Russian olive (**Elaeagnus angustifolia**) are scattered along the Woman Creek watershed. The forested canopy is generally open enough to allow an understory of sandbar willow, snowberry, and indigo bush. Occasionally, poison ivy (**Toxicodendron rydbergii**) is present. Along the woodland edges, common herbaceous species include baltic rush, reed canary grass (**Phalaris arundinacea**), Nebraska sedge, scouring rush, timothy (**Phleum pratense**), giant goldenrod (**Solidago gigantea**), and wintercress. The most diverse complement of tree, shrub, and understory herbaceous species is found in drainage D1 of Rock Creek. This drainage supports the only stand of boxelder (**Acer negundo**) observed onsite. In addition, patches of poison ivy, stinging nettle (**Urtica dioica**), giant goldenrod, **Scirpus pallidus**, manna grass (**Glyceria** sp.), and cow parsnip (**Heracleum spondylium**) frequently occur.

Scrub-shrub wetlands are usually dominated by either sandbar willow or indigo bush, although a few mixed stands occur. Sandbar willow tends to form dense thickets with little ground cover and is typically located in upper and middle drainage reaches having longer hydroperiods. Peach-leaf willow is found in nearly all of the drainages but is rarely dominant. Understory species, when present, are similar to those described for forested wetlands. Varying amounts of baltic rush cover is present, along with Nebraska sedge and even some cattail or rush. In streams with temporary hydroperiods, indigo bush is more common than sand bar willow, and may occur in open stands with inclusions of mesic prairie species such as switchgrass, slender wheatgrass, Canada bluegrass, western wheatgrass, white prairie aster, and western ragweed. Canada thistle and catnip (**Nepeta cataria**) may be present in these stands as invaders.

The species associations in emergent wetlands along streams are often similar to those noted for the slope wetlands. However, some species such as great bulrush (**Scirpus validus**), prairie bulrush (**Scirpus paludosus maritimus**), nodding smartweed (**Polygonum lapathifolium**), and barnyard grass (**Echinochloa muricata**) are typically restricted to saturated or ponded habitats along stream channels. Other species more commonly found in these areas include manna grass **Glyceria sp.**, dark green bulrush (**Scirpus pallidus**), narrow leaf cattail, wooly sedge (**Carex lanuginosa**), speedwell (**Veronica sp.**), watercress, water plaintain (**Alisma subcordatum**), water smartweed (**Polygonum amphibum**), and water parsnip (**Cicuta maculata**). Beds of watercress are locally abundant but never extensive due to limited channel area. Duckweed tends to be abundant in pooled areas of the channel. Seasonal and temporary wetlands in the lower channels of Walnut Creek and the Smart Ditch drainage tend to be extensively invaded by tall fescue (**Festuca arundinacea**).

Drawdown zones along impoundments are low in species diversity. The lower semipermanent zones are dominated by broad leaf or narrow leaf cattail and giant bulrush, while the middle, seasonal zones are typically dominated by reed canarygrass, spike rush, smartweeds, cocklebur, barnyard grass, indigo bush, sandbar willow and baltic rush. Temporary wetlands in the upper pool area and splash zone typically include species such as foxtail barley, baltic rush, indigo bush, sandbar willow, Canada thistle, cottonwood saplings, western wheatgrass, Mexican dock, downy brome, and Kentucky bluegrass.

Aquatic bed wetlands are usually very small, occupying shallow, permanent ponds, or shallow marginal areas of deeper ponds. These areas were found in both natural pools and impoundments along the Rock Creek drainage and in several impoundments in other drainages. Species inventories were not taken, but the main dominants were sago pondweed (**Potomogeton pectinatus**) and a filamentous chlorophyte (**Cladophora sp.**). In the Walnut Creek basin, aquatic bed types are dominant or at least present in the landfill pond and the A-1, A-2, B-1, and B-2 ponds. Within the Woman Creek-Smart Ditch drainage, small areas of aquatic bed can be observed at the D-2 pond. Two areas of aquatic bed also occur in the Antelope Springs wetland complex.

Unconsolidated bed wetlands are either barren or support sparse levels of drawdown vegetation such as algae, needle spikesedge, or barnyard grass. These types are common on mud flats or shorelines along the A, B, C and D series of ponds, and behind various old stock ponds scattered on the site.

SUBSTRATES, SOILS, AND TOPOGRAPHY

These variables, due to lack of information and more subtle influences, were not used as much in mapping as hydrology and vegetation. These variables, however, can greatly influence the kinds and amounts of wetland communities found on the landscape, but it is premature and beyond the scope of this study to evaluate their relative importance. It is obvious, however, that structure and composition of the wetlands are influenced by the substrate upon which they live. The geology and soils, for example, greatly influence moisture infiltration, movement and fluctuation of ground water, upper soil water retention and availability, plant uptake of nutrients, soil gas levels, and chemical reactions.

During the field surveys, a general difference in wetland communities was observed along a west to east gradient on the site. To the west, small stream channels and slope seeps are better watered and support more of the mesic and hydric grasses and sedges (big bluestem, Indian grass, Kentucky bluegrass, wooly sedge, timothy, manna grass, and redtop. The same trend was observed for various mesic and hydric forbs. To the east, however, slope wetlands are smaller, are less likely to exhibit saturated hydrology, and do not contribute to stream flow. It was also noted that soils of the valley fill deposits are less permeable, contain more silt and clay, and have more mineral salts. Accordingly the diversity of mesic and hydric graminoids and forbs within wetlands is lower. Also, more salt-tolerant species such as foxtail barley (**Hordeum jubatum**), scratchgrass (**Muhlenbergia asperifolia**), narrow leaf cattail, western wheatgrass, three-square (**Scirpus americanus**), prairie bulrush, saltbush (**Atriplex**) and prickly lettuce (**Lactuca serriola**) are encountered.

DETAILED SOIL EVALUATIONS

Detailed soil investigations were limited as previously described in Chapter 3. However, a few shallow pits were observed in different wetlands considered to be under the influence of temporary, seasonal, or saturated water regimes. Table 4-3 presents the results of this investigation within drainage F of the Rock Creek watershed and Smart Ditch drainage within the Woman Creek watershed.

TABLE 4-3			ROCK CREEK-DRAINAGE F---SOILS INVESTIGATIONS									
Soil Name	Horizon	Depth (in.)	Matrix Color	Mottling	Moisture	Org. Mat.	Texture	% Gvl	Odor	Drainage	Wetl. No	Wet.Type
Oxic-Aquic	A1	0-5	10YR 2/1	No	Saturated	7-8% est.	Loam	5%	None	S. Poorly	2g	PEMB
Haplostoll	A2	5-12	10YR 2/1	No	Saturated	"	SC Loam	10%	None	Drained		
	A3	12-25	10YR 2/1	No	Saturated	"	SC Loam	10%	None			
	C	25-36	2.5YR 2.5/1	No	Saturated		SC Loam	20%	None			
Notes: Oxidizing environment; no soluble ferrous iron; water movement through profile; cobble abundant at 25 inches.												
Typic Epi-	A1	0-4	10YR 2/1	No	Moist	7-8% est.	Loam	5%	None	S. Poorly	2h	PEMC
aquoll	A2	4-14	10YR 4/1	No	Sat. at 10"	"	SC Loam	30%	None	Drained		
	C	14-25	7.5YR 4/6;	Yes--50%	Saturated		GRV-CL	>30%	None			
			2.5Y 5/2									
Notes: In baltic rush "cowlick" area (80% cover); somewhat hummocky surface.												
Pahic Hapla-	A1	0-5	10YR 2/1	No	Saturated	>8% est.	Mucky Peat		None	Poorly	1c	PEMB
quoll	A2	5-18	10YR 2/1	No	Saturated	<8%	SC Loam	n.d.	H2S	Drained		
	A3	18-22	10YR 3/1	No	Saturated	<8%	GVR-SL	>	None			
Notes: In channel area; water movement in profile; slight sulfide odor; not thick enough for histic soil; Nebraska sedge dominant.												
Pahic Argi-	A1	0-4	10YR 2/1	No	Moist	7-8%-est.	Loam	10%	None	S. Poorly	2j	PEMC
stoll	A2	4-10	10YR 2/1	No	Moist	"	GRV-SCL	10%	None	Drained		
	A3	10-20	10YR 2/1	No	Sat. at 14"	"	GRV-SCL	10%	None			
Notes: Nearly skeletal soil; probable slide deposit; cobble to surface; depression at slope base: spike rush dominant.												
A very deep A horizon.												
Pahic Haplo-	A1	0-3	10YR 2/1	No	Moist	no est.	Loam-GR	10%	None	W. Drained	2k	PEMA
stoll	A2	3-14	10YR 2/1	No	Moist	no est.	GRV-SL	10%	None			
	A3	14-22	10YR 2/1	No	Moist	no est.	GRV-SCL	10%	None			
Notes: High streambank area; deep "prairie" soil; no saturation to 22 inches; baltic rush dom., with some snowberry and wintercress.												

TABLE 4-3 (cont'd) WO			WOMAN CREEK-SMART DRAINAGE--SOILS INVESTIGATIONS									
Argiustoll	A	0-2	10YR 3/2	No	Moist	6-7%-est.	Loam-26% Clay		None	W. Drained	3d	PEMA
	Bt1	2-8	10YR 3/2	No	Moist	"	CL-31% Clay		None			
	Bt2	8-20	10YR 2/1	No	Moist	no est.	C-45% Clay		None			
Notes: High streambank area; no saturation to 20 inches; cobble at 10-20 inches; baltic rush dom.; no soluble iron												
Argiustoll?	A1	0-3	10YR 2/2	No	Moist	6-7%-est.	Loam-FG	2%	None	W. Drained	3e	PEMA
	A2	3-7	10YR 2/2	No	Moist	"	Loam-MSBK	2%	None			
	Bw1	7-14	10YR 2/2	No	Moist	no est.	Loam-CSBK	2%	None			
	Bw2	14-16	10YR 3/2	No	Moist	no est.	GRV-SCL	40%	None			
	C	16-22	10YR 4/2	No	Moist	no est.	GRV-FSL	20%	None			
Notes: High streambank area; no saturation to 22 inches where fine sand hit; considerable gravel; baltic rush dom.;												
No soluble iron.												

Soils in drainage F along Rock Creek are more coarse and pervious than those sampled in Woman Creek, having more cobble, gravel and less fines. Also, they have more humus in the A horizon but, on the other hand, lack B horizons and are basically azonal or immature soils. The soils along drainage F are also located on steeper slopes subject to landsliding.

There is no evidence of anaerobic conditions in the upper soil profiles examined at the Rock Creek sites. Mottling was only noted in the C horizon of a seasonal wetland (2h) in drainage F. While saturation is common in drainage F wetland soils, pit observations indicated that flow (pore) velocities are high, as at wetland 2g and wetland 1c. Thus, diffusion and other aeration processes maintain oxygen in the soils and allow decomposition gases to escape. These saturated and aerated soil profiles resemble those which have been described for oxy-aquic soils.

The sites dominated by baltic rush, but which contained some upland plants, exhibit characteristics of rich prairie soils. The A horizons were deep and dark. Members of the soil survey team did not generally consider these soils to be hydric due to the absence of saturation in the profile.

OTHER SOIL OBSERVATIONS

Small core samples were taken from seasonal and temporary wetlands in the Woman and Walnut Creek drainages in an attempt to further clarify plant-hydrologic-soil indicator relationships. Probes were removed from nearly every wetland, but only 26 samples proved useful for examination. Because of the presence of claypan, and/or a gravel-cobble substrate, it is usually difficult to extract more than 3 to 4 inches of a soil core, but occasionally it was possible to penetrate to depths between 6 to 12 inches. Observations from the successful samples are recorded in Table 4-4.

Saturation conditions within the upper 12 inches of soil profile occurred at a frequency level of 30 percent in the seasonal wetlands. No saturation was found in any of the temporary wetlands. Indicators of prior soil saturation (gleying, mottling, and iron plaques) were observed in about 62 percent of the samples from seasonal wetlands. Of the 14 temporary wetlands observed, 6 exhibited mottling or the development of iron plaque on roots.

The higher frequency of observations for soil hydric indicators as compared to soil saturation suggests that the latter is a less reliable indicator of hydric soils.

Direct relationships between soil hydrology and plant hydrology indicators were not high within the temporary water regime. Only about 60 percent of the seasonal wetlands exhibited saturation in the upper 6 to 12 inches of soil. Some of the baltic rush stands classified as temporary appear to be "edge" stands; e.g., able to thrive on either side of a saturated soil regime. More observations of soils under varying meterologic and growing season conditions are needed.

On slope wetlands, not all soil saturation conditions may occur from a rising ground water table. During the spring or after summer or fall wet periods, perched water tables may develop over embedded claypan layers. With a tight claypan, retardation of downward moisture percolation from runoff or precipitation may temporarily create saturated conditions in th overlying surface soil.

TABLE 4-4
SUPPLEMENTAL OBSERVATIONS OF SOIL INDICATORS

Drainage/ Wetl. No.	Wetl. Type	Sample Depth 1/	Mottles/ Gleying	Moisture Level	Dominant Plants
Woman Cr.					
E1B	PEMC	12"	None	Moist	CANE;CIAR JUBA
E1F	PEMA	12"	None	Sat.-12"	JUBA;CIAR
E1I	PEMC	6"	Yes	Sat.-6"	JUBA;CIAR GEAL
E1N	PEMA	12"	None	Moist	JUBA;CIAR
F1G	PEMC	6"	Yes	Sat.-4"	JUBA;SPPE
M22B	PEMA	12"	None	Moist	JUBA;CIAR
M22C	PEMC	10"	None	Sat.-10"	JUBA;TYLA CIAR
M22D	PEMC	6"	Yes	Sat.-6"	JUBA;TYLA CIAR
M22F	PEMC	10"	Yes	Sat.-10"	JUBA;CIAR
D1C	PEMA	12"	Yes	Moist	CIAR;JUBA SPPE
D2A	PEMC	12"	Yes	Moist	LYAL;TYLA JUBA
M41E	PSSA	6"	Yes (root placque)	Moist	AMFR;CIAR SYOC
M41G	PEMA	6"	None	Moist	JUBA;SYOC
M42A	PEMC	6"	Yes	Sat.-5"	TYLA;LYAM
M71M	PEMC	6"	Yes	Moist	ELE1;AMFR
M81L	PEMA	6"	None	Moist	JUBA;HOJU CIAR
Smart Ditch					
M43J	PEMC	10"	Yes	Moist	JUBA
M43M	PEMA	10"	Yes (root placque)	Moist	AGSM
M55D	PEMC	10"	Yes	Moist	TYLA;CIAR
M55T	PEMC	10"	Yes	Ponded	ELE1;HOJU

Walnut Cr.

B3B	PEMA	12"	Yes	Moist	JUBA;SYOC CIAR
B3D	PEMA	10"	None	Moist	JUBA;HYPE CIAR
B3J	PEMA	7"	None	Moist	JUBA;CIAR
B3P	PEMA	8"	None	Moist	JUBA;CIAR
B3R	PEMA	10"	Yes	Moist	JUBA
B3V	PEMA	8"	Yes (root placque)	Moist	JUBA

1/ Sampling depth limited by hardpan/gravel/cobbles.

LAND USE AND DEVELOPMENT FACTORS

Prior to development of the Rocky Flats plant, site alterations were associated with ranching and small agricultural operations. Developments were limited to small stock dams, primitive roads and trails, crossings, and fences. While grazing altered the vegetation, the paucity of rills and gullies onsite suggests that adequate cover existed for erosion protection. Even intense grazing on the coarse surface of the Rocky Flats Alluvium was not able to significantly alter species composition onsite because the stony substrate afforded microhabitat protection. The water supply ditches (McKay and Church) constructed across the site have had little impact on the land and appear to be only a minor factor in recharge of ground water onsite. This is because the ditches are used only occasionally, usually during the March-May period.

Development of the Rocky Flats plant has gradually led to more land disturbance and greater alteration of site drainage and streamflow. The water diversion and storage system on Walnut Creek has created semi-permanent and permanent wetlands (ponds) in the channel, but it has also impacted small segments of seasonal wetlands in the Walnut Creek channels immediately below the dams. Development of the C-2 dam on Woman Creek and diversions of Woman Creek flows have contributed to the dewatering of Woman Creek and loss of seasonal wetlands downstream. On the other hand, possibly because of importing water via the Kinnear Ditch, the middle reach of Woman Creek (above the C-1 dam) may now support more aquatic life than historically. Runoff from the plant site into Woman Creek and Walnut Creek carries a wider variety of chemical substances than historically, but the aquatic life stresser effect can not easily be measured because of the dominating effect of other onsite physical limiting factors.

Lands surrounding the Rocky Flats site are being proposed for more intense land utilization. Road traffic along the west, north, and east sides of the site is steadily increasing, resulting in an increase in vehicle emissions and noise along the site. With more traffic, the incidence of wildlife-vehicle collisions is also steadily increasing. At the northwest corner of the site, considerable debris from the State highway and from the wind energy site has been transported into wetland areas along the channel of drainage A. At the present time, large scale mining operations along the west boundary are removing the gravel and cobble deposits of the Rocky Flats Alluvium. This activity is intersecting the ground water table and creating more open, permanent ponds.

In the future, site wetlands will be exposed to additional stresses as land development continues. Three major types of disturbances pose future potential threats to the biologic integrity of the wetlands: (1) disruption or curtailment of surface/ground water supplies; (2) surface disturbance of fragile soils in the wetlands; and (3) accidental contamination of wetland surface/ground water supplies. Site-driven management factors; e.g., construction activities and absence of grazing and periodic fires, also influence wetland dynamics. These factors influence the spread of aggressive alien plants, such as Canada thistle. These concerns are addressed in a later section of the report.

WETLAND FUNCTIONAL VALUES

While these values are often misunderstood and poorly evaluated, it is at least appropriate to provide some information on the more obvious values.

Generally, as natural features decline in a highly modified landscape, they become potentially more valuable to society as natural reference sites. Since undeveloped alluvial fan and pediment landscapes along the Front Range are disappearing due to urbanizing influences, it can be safely assumed that the existing natural wetlands at Rocky Flats will become more important from a scientific and natural heritage perpsective.

Currently, site wetland values are most closely linked to slope erosion protection services, protection of water quality and the ability to produce and sustain abundant and diverse fish and wildlife communities.

The specific fish and wildlife value of a wetland at Rocky Flats largely depends upon its water regime and its location in the landscape. Wetlands in the stream channels provide a wider spectrum of values for both aquatic and terrestrial animal communities, while those on the slopes are more limited because use is more seasonal. However, the latter provide water supplies for some stream segments, and the extensive baltic rush communities on the slopes turn an otherwise semiarid grassland into an ecosystem which mimics the wet meadows and shallow marshes of subhumid regions.

STREAMS

The streams support: (1) semi-permanent to intermittently exposed pool and riffle communities;

(2) ephemeral pool and riffle communities; and (3) permanent lentic communities or ponds.

The near permanent pool and riffle communities support small stream fishes (chubs and minnows) and sensitive aquatic macroinvertebrates which require a reliable water supply and firm substrate (mayflies, caddisflies, leeches, and so forth).

The ephemeral ponds and channel areas (scour holes and pool and riffle habitat) provide temporary pond, mudflat, and gravel bar habitat during periods of runoff. Food production can be high during spring and early summer, attracting breeding amphibians, shorebirds and waterfowl. Also at this time, channel bars and riffles provide spawning habitat for small fishes ascending the lower reaches of Walnut and Woman Creek drainages. Temporary ponds in isolated scour holes are especially valuable, and can hold water longer into the summer. Later in the season, terrestrial wildlife species, including various big game, upland game, and nongame species utilize the dry channel and scour hole areas when riparian vegetation is present. Trees and shrubs along the streams also provide important browse and cover in the winter and afford shade and relief from heat in the summer.

Permanent ponds have a larger surface area, deeper water, a long shoreline and provide soft substrate. The more open and deeper water areas support aquatic bed vegetation which provides substrate for additional macroinvertebrates, especially small crustaceans, snails, and aquatic insects. The extensive beds of emergent cattails, rushes, and sedges provide nesting areas for numerous birds which prefer to remain close to surface water. Aquatic beds and invertebrates found in the ponds also attract nesting and migratory waterfowl. Deep water habitat in these areas support fish which in turn attract fish eating birds.

SLOPE WETLANDS

The production potential of these wetlands is poorly understood and ongoing site studies are in progress.

The depressional wetlands on the slopes support more life forms than the seeps because they occasionally pond and hold water for considerable periods. Crayfish, for example, are found within wetland 2h along the mainstem of Rock Creek. Thus, many of the depressional areas on the valley slopes support detrital-based invertebrate communities.

Slope seepage areas are used as a water supply for larger animals, including deer, and the lush vegetation is used as a source of browse. The rich, dark soils of temporary and seasonal wetlands (wet meadows) on the slopes also support large numbers of earthworms and sowbugs, which are utilized by numerous burrowing mammals. The saturated wetlands produce a variety of aquatic insects which also add to the productivity of these areas. Temporary wetlands are also extensively used by mule deer for loafing, possibly because of the comfort or protection provided by the mats of baltic rush and benefit of taller cover.

In addition to wildlife value, the seeps often provide a water supply function to small drainages in the Rock Creek and Woman Creek watersheds. As a result, small reaches of these streams have near constant flow regimes.

The scientific and natural heritage value of the seeps appear to be high, as species assemblages in the active seeps are similar to those of fens of montane regions of the foothills and Rocky Mountains and to the wet meadows and marshes of the more easterly prairie states.

WETLAND/RIPARIAN MANAGEMENT PROBLEMS AND OPPORTUNITIES

These topics are grouped according to fish and wildlife, alien plants, soils and ground water, surface water, and resource management information needs.

FISH AND WILDLIFE

Certain large mammals are flourishing onsite. Mule deer are very abundant as is the coyote. Of the smaller mammals, cottontails are abundant as are voles and small field mice. Marsh hawks and some of the buteo hawks are also commonly observed, but burrowing owls, prairie grouse, and jackrabbits were not observed. Two prairie rattlesnakes were seen in two different wetlands in the Woman Creek drainage along with numerous bull snakes. Amphibians were not observed in either the streams or in the seeps; however, they are typically inactive during the late season dry period.

Of concern are the large numbers of mule deer which exert pressure on habitat carry capacity, as well as the increasing potential for deer-vehicle collisions. Maintenance of adequate browse and water supply on the site are measures that can curtail offsite deer movement. Of concern also is the potential for loss of wetland biodiversity. Because deer are very selective in foraging, the most palatable native species in wetlands may disappear first, leaving behind more of the weedy aliens. Future browse studies would help in assessing this potential problem.

ALIEN PLANTS

Alien plants have invaded most of the native habitats of the site, causing varying amounts of degradation. Some of the more abundant species include Canadian thistle (**Cirsium arvense**), Musk thistle (**Carduus nutans**), St. Johnswort (**Hypericum perforatum**), downy brome (**Bromus tectorum**), smooth brome (**Bromus inermis**), kochia (**Kochia scoparia**), yellow sweet clover (**Melilotus officinalis**), and tall fescue (**Festuca arundinacea**). Silver poplar (**Populus alba**), a large tree frequently planted as an ornamental, is thriving in a reach of the Woman Creek channel above the C-1 pond. Russian olives are also found along the middle and lower Woman and Walnut Creek drainages.

Plants observed in wetlands included downy brome, smooth brome, quackgrass, tall fescue, St. Johnswort, toadflax (**Linaria dalmatica**), hybrid cattail (**T. glauca**), Canada thistle, Russian olive, and white poplar. Most of these are limited to temporary wetlands and are not likely serious threats to the integrity of seasonal and saturated wetlands of the hillslopes and stream channels. Hybrid cattail can be a nuisance, but may remain within the fluctuation zone of impoundments. It should be controlled in natural wetlands, and kept out of those subject to soil disturbance. Toadflax may have serious pest potential since is is widespread in grasslands surrounding the Antelope Springs area. It should be removed when it invades wetlands. Canada thistle is already a serious pest, affecting nearly all wetlands.

Downy brome, Canada thistle, smooth brome, quackgrass, tall fescue, toadflax and St. Johnswort are part of a site-wide range management problem. Their persistence relates to past land use activities, including grazing, soil disturbance, and range seeding. To reduce their abundance in native grassland, additional management practices are required, such as mowing, fire, grazing rotation, and so forth. Assessment of these tools to restore temporary wetlands to a natural condition is beyond the scope of this study.

While Canada thistle occurs as a dominant only in upland and temporary wetland sites, plants are also found in seasonal and saturated wetlands. It is puzzling that these infestations are more common in saturated wetlands at Antelope Springs than in those within the Rock Creek watershed. Intrusion of Canada thistle at Antelope Springs especially is of concern because it can affect patterns of wildlife use, reduce biodiversity, and also negatively affect wetland hydrology.

The rapid spread of Canada thistle has been documented at the Malheur National Wildlife Refuge (NWR) in Oregon (Young, 1986). Establishment was attributed to curtailment of grazing and mowing practices, which reduced native polant vigor, and allowed Canada thistle to produce large seed heads and develop extensive root systems. As a result, it readily invaded wet meadow areas.

At Rocky Flats, young Canada thistle plants colonize thick, damp litter slightly elevated above seep water levels. Removal of the litter would reduce the colonization potential. Young (1986) conducted winter and early spring burns at Malheur NWR to determine if this practice could eliminate the existing infestation. The study concluded that while native plant productivity increased and would indirectly arrest further invasions through competitive mechanisms, it would not eliminate existing infestations. Late spring burning has been effectively used in the tall-grass prairie to reduce Canada thistle invasions; however, it is effective only if the litter and the thistle plants can actually be burned, and if taller prairie plants are present to exert competitive effects. Where water levels are at the surface permanently, flame throwers and mechanical or chemical methods of control may be the most effective treatments to remove litter.

SOILS AND GROUND WATER

Soil erosion and loss of ground water supplies are potential threats to wetlands. Slope movement is an ongoing natural process which will also have a future influence.

Severe gully erosion was noticed at a few localities. At the head of South Walnut Creek, erosion was downcutting through valley slope deposits, causing lowering of water levels in slope seepage wetlands (WCB-3a and 3b). The headcut was from 10 to 12 feet deep near wetland 3b. Other gullies were noted along the WCA northern drainage into Walnut Creek, due to spillages from an irrigation ditch.

Reduction of ground water discharge into surface drainage channels would lead to a significant loss of stream wetlands. Interruption of ground water flow to the seep wetlands by excavation and subsequent filling should be avoided as should activities which reduce recharge of the aquifer. Lining of water supply canals, or tighter regulation of flows through the canals, could result in less recharge to shallow aquifers in the Rock Creek and Woman Creek drainages. Coordination with local ditch companies should ensure that recharge areas are not altered when ditches are maintained or improved.

SURFACE WATER

Existing diversions from Kinnear Ditch into upper Woman Creek help to maintain one of the most productive and diverse stream ecosystems onsite. Likewise, flows released down the Smart Ditch drainage are desirable because they maintain seasonal and saturated wetlands along most of the drainage.

A long-term goal could be to develop a permanent flow regime on Woman Creek from near the headwaters downstream to Indiana Street. This may require the purchase of shares in a ditch company and some upstream storage. A longer duration flow level of only 0.25 to 0.5 c.f.s. (183 to 365 acre-feet), would improve aquatic resources.

Flows on Walnut Creek could also be improved. This would require acquisition of shares in McKay or Upper Church ditch water and possibly some dedicated storage in upper Walnut Creek. Flows could still bypass the ponds through use of the Walnut Creek diversion channel. Some alterations in the culvert through Indiana Street may be necessary for improved fish movement.

It was noted that wetland 13b in the BCD drainage of Rock Creek watershed had been partially drained. Installation of a water control structure in the outlet would allow regulation of the water level, possibly improving the wetland.

RESOURCE MANAGEMENT INFORMATION

The most critical information gap relates to how ground water maintains the slope seepage wetlands. This requires definition of how: (1) water is supplied to the wetlands by the Rocky Flats Alluvium/Arapahoe Formation complex; (2) the quantity of water required; (3) water movement and water table fluctuations in the valley fill deposits; and (4) amount of discharge to the stream areas. Many variables are involved including regional and local recharge, geological structure, porosity of sediments, head pressure, evapotranspiration, atmospheric pressure, and possibly even such phenomena as the **Lisse effect** (Meyboom, 1967). The latter manifests itself as rapid rises in ground water following precipitation events, especially in sandy soils.

As previously indicated, baltic rush stands were mapped as wetlands, although definitive hydrologic or hydric soil indicators could not always be directly observed. Given the known amplitude of water table fluctuations from several well hydrographs near or at these stands, however, this was viewed as a reasonable approach. Because of the short study time frame it was not possible to examine all of the recently collected alluvial ground water information in seep areas within the upper and middle Woman Creek basin. This evaluation, once more complete information on a seasonal and year-by-year basis has been obtained, could improve our understanding of ground water fluctuations and discharge in the seep areas.

CHAPTER 5 - REGULATORY FRAMEWORK

There are numerous laws, regulations, and directives which potentially affect project planning and management of wetlands at the Rocky Flats plant. These include the National Environmental Policy Act (NEPA); Executive Order 11990 on Wetlands; Sections 401, 402, and 404 of the Clean Water Act; and the Fish and Wildlife Coordination Act. A previous wetlands assessment report (USDOE, 1991) provides more specific information on many of the above statutes. Also, because the site has generated hazardous and toxic wastes and is on the National Priority List, all site activities must comply with applicable provisions of the Resource Conservation and Recovery Act (RCRA); the Toxic Substances Control Act (TSCA); the Safe Drinking Water Act (SDWA); the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or "Superfund;" and the Superfund Amendment Reauthorizaton Act (SARA). While the DOE has the primary responsibility for compliance with the above statutes as related to wetlands, the regulations written by different agencies are often complex and can potentially be misunderstood. Offsite factors, especially downwind airsheds, and the location of suburban drinking water supplies downstream at Standley Lake also complicate site planning and resource management.

CORPS REGULATORY PROGRAM

The Corps Regulatory Program for discharge of dredged or fill material has developed in response to directives and legal interpretations of Section 404 of the Clean Water Act. Most isolated wetlands are considered to be "Waters of the United States" and so discharge of dredge or fill into a wetland requires a Federal permit. The Federal review process for a permit can be quite simple if the impacts of the project are not measurable or insignificant but can be lengthy and complex for larger projects. The Corps issues various types of permits, depending upon type and scale of action. All of these are subject to EPA oversight, because EPA is the Federal agency charged with overall administration of the Clean Water Act. Individual permits are normally processed on a case-by-case basis over a 2- to 3-month period. This includes a public review period to ensure that the activity complies with all applicable Federal and State reglations and requires a Section 401 State water quality certification. The substantive criteria used by the Corps to evaluate an application are the 404(b)(1) guidelines. The guidelines require that an impact to an aquatic area should be avoided whenever possible. General permits are typically developed for actions which are similar in type and when they are judged to be minimal or insignificant on both an individual and cumulative basis. A nationwide permit is a commonly used form of a general permit for generic actions such as bank riprap, minor dredging, structures in artificial canals, wetland restoration, small docks and piers, emergency cleanup of hazardous and toxic waste, emergency watershed protection, and so forth. The Corps issues nationwide permits for 36 categories of activities. Nationwide Permit 26 has been of most concern to resource agencies managing wetlands because it can generally authorize an activity affecting less than one acre of isolated wetlands without notification to the Corps. It also authorizes actions which can affect up to 10 acres with a minimum of review.

ONSITE WETLAND REGULATION

Although most wetlands at Rocky Flats are under 1 acre in size, the use of Nationwide Permit 26 for minor activities at Rocky Flats is complicated by the presence of hazardous substances within some of the wetlands, especially those in the industrial area, in the series A, B, and C ponds, and in the South Interceptor ditch. Because of this situation, it is understood that EPA has jurisdiction on Rocky Flats wetlands. This is based on Regulatory Guidance Letter No. 85-7 (USACE, 1987) and Regulatory Guidance Letter No. 89-3 (USACE, 1989). In cases where EPA has the lead because of this CERCLA issue, a Section 404 permit is not required; instead, EPA conducts the functional equivalent of the Section 404 review including compliance with the 404(b)(1) guidelines. Authority for EPA to act in special or complex circumstances is also provided under a memorandum of understanding between the EPA and the Department of Army (Department of Army, 1989). Whether EPA will eventually request the Corps to process routine permit actions or use internal procedures for all of the actions, remains to be determined. The responsibility for final determinations on jurisdiction and Section 404 permitting requirements rests with the EPA.

CONCLUSIONS

Wetland classification followed the U. S. Fish and Wildlife Service's hierarchical method, while field delineation followed the 1987 methods manual of the U. S. Army Corps of Engineers. Locational and spatial dimensions of wetlands were recorded through use of a Global Positioning System (GPS), while site microtopographic, hydrologic, soils and vegetation data were recorded in the field and later entered into spreadsheets utilizing Excel software program on a personal computer.

While the above delineation, classification and mapping procedures were adequate for study purposes, occasional difficulty was experienced in defining wetland-upland borders, and in assigning temporary and seasonal water regimes. This was due to conduct of the survey during the fall following drier than normal growing season conditions, together with the inability to observe or obtain sufficient site-specific information on how ground or surface water pulses influence saturation in the upper part of the soil.

Conversion of data obtained through the GPS system to the ARC/INFO GIS System was necessary to develop the field-based maps. However, a difficulty was experienced during integration of these systems, because the GPS system collects data in polygonal format, while the GIS requires ARC-node topology. In order to convert to the GIS system, it was necessary to edit the line data where polygons overlapped. This was a very time-consuming process and in some cases required the use of ancilliary data such as color photos, field photos, and other GIS layers to properly position and orient the polygons. This problem could be alleviated by utilizing a more accurate GPS system, elimination of duplicate survey lines between polygons, and by acquiring additional point field data.

A wide variety of wetlands occur along the valley slopes, flood plains and stream channels on the 6,550 acre Rocky Flats site. The majority of these wetlands are natural systems. The ecological structure and function of these systems are controlled by the pattern of slope runoff and ponding, channel discharge and morphology and ground water seepage or discharge.

About 1100 wetlands and deep water habitats are classified and described. About 27 per cent are found along the valley slopes, while the remainder occur along the drainage channels. In terms of numbers, about 60 per cent are found in the Walnut and Rock Creek drainages, but on an area basis 60 per cent occurs in the Woman Creek and Rock Creek drainages, where there are larger slope wetland complexes. The Walnut Creek drainage has the greatest number of stream wetlands and deep water habitats because of numerous drainages and impoundments.

Slope wetlands were often clustered around active seep areas, subject to surface water ponding and discharge. These wetlands are usually diverse in structure and composition, and are very productive biologically. The Woman Creek drainage area has 16 seep areas, while the Rock Creek and Walnut Creek drainages have 9 and 3, respectively. The numbers of active seeps probably varies somewhat on a yearly or longer term basis, depending upon aquifer recharge rates. During 1993 along the Walnut Creek drainage, some seep areas were noticeably drier than in previous years.

Some of the stream wetlands are also very diverse in structure and composition, especially within the more abruptly incised and deeper drainages of the Rock Creek watershed. These wetlands have vegetational affinities to montane wetlands in the foothills.

Natural values of these wetlands include erosion control, flood water storage and attenuation, water quality maintenance, natural heritage, and fish and wildlife habitat. Wetlands in the Rock Creek and the Antelope Springs area exhibit the most biodiversity and are very productive ecosystems.

The Environmental Protection Agency has primary regulatory responsibility at Rocky Flats due to CERCLA issues, but the U.S. Army Corps of Engineers has primary regulatory responsibility for off-site activities which can also affect the ecological integrity of site wetlands. The wetland mapping produced in this effort will assist DOE in developing a remedial action plan for stabilization of hazardous wastes at the Rocky Flats Plant. Onsite remedial work requiring construction will need to consider impacts on site wetlands, such as how ground water recharge and ground water flow are affected. Offsite impacts are also of concern, and developers and regulators alike should view the the Rocky Flats Alluvium as a regional, integrated aquifer. Alterations to the aquifer can potentially affect wetlands under Federal ownership and jurisdiction.

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APPENDIX A

WETLAND PLANT LIST

WETLAND PLANT SPECIES IIST 1/
Rocky Flats Plant Site
MAY 1994

NAME	COMMON NAME	STATUS	CODE
Acer negundo L.	Box-elder	3	ACNE1
Achillea millefolium L.	Yarrow	4	ACMI1
Agropyron, sp.	Wheatgrass	4	AGR1
Agropyron caninum (L.) Beauv.	Slender Wheatgrass	4	AGCA1
Agropyron repens (L.) Beauv.	Quackgrass	3	AGRE1
Agropyron smithii Rydb.	Western Wheatgrass	4	AGSM1
Agrostis hyemalis (Walt.) B. S .P.	Ticklegrass	4	AGHY1
Agrostis stolonifera L.	Redtop	3	AGST1
Alisma subcordatum Raf.	Water-Plantain	1	ALSU1
Alopecurus, sp.	Foxtail	1	ALO1
Alopecurus aequalis Sobol.	Shortawn Foxtail	1	ALAE1
Amaranthus, sp.	Pigweed	4	AMA1
Amaranthus albus L.	Tumbleweed	4	AMAL2
Amaranthus retroflexus L.	Rough Pigweed	4	AMRE1
Ambrosia artemisiifolia L.	Common Ragweed	4	AMAR1
Ambrosia psilostachya DC.	Western Ragweed	3	AMPS1
Amorpha fruticosa L.	False Indigo	1	AMFR1
Andropogon gerardii Vitman	Big Bluestem	4	ANGE1
Anemone canadensis L.	Meadow Anemone	2	ANCA1
Apocynum, sp.	Dogbane	3	APO1
Apocynum cannabinum L.	Hemp Dogbane	3	APCA1
Arctium minus (Hill) Bernh..	Burdock	NI	ARMI1
Artemisia, sp.	Sage	NI	ART1
Artemisia frigida Willd.	Fringed Sagebrush	NI	ARFR1
Artemisia ludoviciana Nutt.	White Sage	4	ARLU1
Asclepias incarnata L.	Swamp Milkweed	1	ASIN1
Asclepias speciosa Torr.	Showy Milkweed	3	ASSP1
Asparagus officinalis L.	Asparagus	4	ASOF1
Aster ericoides L.	Aster	4	ASER1
Aster falcatus Lindl.	Aster	3	ASFA1
Aster laevis L.	Smooth Blue Aster	NI	ASLA1
Atriplex, sp.	Saltbush	NI	ATR1
Atriplex argentea Nutt	silverscale Saltbush	NI	ATAR1
Barbarea orthoceras Ledeb.	Winter Cress	1	BAOR1
Beckmannia syzigachne (Steud.) Fern.	American Sloughgrass	1	BESY1
Bidens cernua L.	Nodding Beggarticks	1	BICE1
Bidens comosa (Gray) Wieg.	Beggarticks	2	BICO1
Bidens frondosa L.	Beggarticks	2	BIFR1
Bromus inermis Leyss.	Smooth Brome	4	BRIN1
Bromus tectorum L.	Cheatgrass	4	BRTE1
Buchloe dactyloides (Nutt.) Engelm.	Buffalo-grass	4	BUDA1
Calamagrostis canadensis (Michx.) Beauv.	Bluejoint	1	CACA1
Carex, sp.	Sedge	3	CAR1
Carex brevior (Dew.) Mack. ex Lunell.	Fescue Sedge	3	CABR1
Carex emoryi Dew.	Emory Sedge	1	CAEM1
Carex hystericina Muhl.	Sedge	1	CAHY1
Carex lanuginosa Michx.	Wooly Sedge	1	CALA1
Carex nebraskensis Dew.	Sedge	1	CANE1
Carex praegracilis W. Boott.	Clustered-field Sedge	2	CAPR1

Ceratophyllum demersum L.	Coontail	1	CEDE1
Chenopodium album L.	Lamb's-quarters	3	CHAL1
Cicuta maculata L.	Water Hemlock	1	CIMA1
Cirsium arvense (L.) Scop.	Canada Thistle	4	CIAR1
Conium maculatum L.	Poison Hemlock	2	COMA1
Convolvulus arvensis L.	Field Bindweed	NI	COAR1
Dactylis glomerata L.	Orchardgrass	4	DAGL1
Distichlis spicata (L.) Greene	Inland Salt Grass	NI	DISP1
Echinochloa, sp.	Barnyard Grass	2	ECH1
Echinochloa crusgallii (L.) Beauv.	Barnyard Grass	2	ECCR1
Echinochloa muricata (Beauv.) Fern.	Barnyard Grass	1	ECMU1
Elaeagnus angustifolia L.	Russian-Olive	3	ELAN1
Eleocharis, sp.	Spikesedge	1	ELE1
Eleocharis acicularis (L.) R. & S.	Needle Spikesedge	1	ELAC1
Eleocharis macrostachya Britt.	Spike Rush	1	ELMA1
Elymus canadensis L.	Canada Wild Rye	4	ELCA1
Epilobium ciliatum Raf.	Willow Herb	1	EPCI1
Equisetum, sp.	Horsetail	3	EQU1
Equisetum arvense L.	Field Horsetail	3	EQAR1
Euphorbia, sp.	Spurge	4	EUP1
Festuca, arundinacea.	Tall Fescue	4	FES1
Galium aparine L.	Catchweed Bedstraw	4	GAAP1
Galium boreale L.	Northern Bedstraw	3	GABO1
Galium trifidum L.	Small Bedstraw	1	GATR1
Geum aleppicum Jacq.	Yellow Avens	3	GEAL1
Glyceria, sp.	Mannagrass	1	GLY1
Glyceria grandis Wats.	Tall Mannagrass	1	GLGR1
Glyceria striata (Lam.) Hitchc.	Fowl Mannagrass	1	GLST1
Glycyrrhiza lepidota Pursh.	Wild Licorice	4	GLLE1
Helianthus, sp.	Sunflower	3	HEL1
Heracleum sphondylium L.	Cow Parsnip	2	HESP1
Hordeum jubatum L.	Foxtail Barley	2	HOJU1
Hypericum perforatum L.	Common St. John's-wort	4	HYPE1
Iris missouriensis Nutt.	Blue Flag	1	IRMI1
Juncus balticus Willd.	Baltic Rush	1	JUBA1
Juncus bufonius L.	Toad Rush	1	JUBU1
Juncus ensifolius Wikst.	Rush	1	JUEN1
Juncus interior Wieg.	Inland Rush	3	JUIN1
Juncus nodosus L.	Knotted Rush	1	JUNO1
Juncus torreyi Cov.	Torrey's Rush	2	JUTO1
Kochia scoparia (L.) Schrad.	Kochia	4	KOSC1
Lactuca serriola L.	Prickly Lettuce	3	LASE1
Lemna minor L.	Duckweed	1	LEMI1
Linaria dalmatica (L.) Mill.	Toadflax	NI	LIDA1
Linaria vulgaris Hill	Toadflax	NI	LIVU1
Lobelia siphilitica L.	Blue Cardinal Flower	1	LOSI1
Lycopus americanus Muhl. ex Barton	Water-horehound	1	LYAM1
Lysimachia ciliata L.	Fringed Loosestrife	2	LYCI1
Lythrum alatum Pursh.	Winged Loosestrife	1	LYAL1
Medicago sativa L.	Alfalfa	NI	MESA1
Melilotus, sp.	Sweetclover	4	MEL1
Melilotus alba Medic.	White Sweetclover	4	MEAL1
Melilotus officinalis (L.) Pall.	Yellow Sweetclover	4	MEOF1
Mentha arvensis L.	Field Mint	2	MEAR1

Mimulus glabratus H. B. K.	Roundleaf Monkey-flower		MIGL1
Mimulus guttatus DC.	Monkey-flower	1	MIGU1
MMonarda fistulosa L.	Wild Bergamot	4	MOFI1
Muhlenbergia asperifolia (Nees & Meyen) Parodi	Scratchgrass	2	MUAS1
Nasturtium officinale R. Br.	Watercress	1	NAOF1
Navarretia minima Nutt.	Navarretia	3	NAMI1
Nepeta cataria L.	Catnip	4	NECA1
Oenothera, sp.	Evening Primrose	4	OEN1
Opuntia, sp.	Prickly Pear	NI	OPU1
Orthocarpus luteus Nutt. ex Pursh.	Owl Clover	4	ORLU1
Oxalis, sp.	Wood Sorrel	4	OXA1
Panicum capillare L.	Witchgrass	3	PACA1
Panicum virgatum L.	Switchgrass	3	PAVI1
Phleum pratense L.	Timothy	4	PHPR1
Plantago, sp.	Plantain	3	PLA1
Plantago lanceolata L.	English Plantain	3	PLLA1
Plantago major L.	Common Plantain	3	PLMA1
Poa, sp.	Bluegrass	4	POA1
Poa compressa L.	Canada Bluegrass	4	POCO1
Poa pratensis L.	Kentucky Bluegrass	4	POPR1
Polygonum, sp.	Knotweed		POL1
Polygonum amphibium L.	Scarlet Smartweed	1	POAM1
Polygonum convolvulus L.	Wild Buckwheat	4	POCO2
Polygonum lapathifolium L.	Pale Smartweed	1	POLA1
Polygonum pensylvanicum L.	Smartweed	2	POPE1
Polygonum persicaria L.	Lady's Thumb	1	POPE2
Polypogon monspeliensis (L.) Desf.	Rabbitfoot Grass	1	POMO1
Populus alba L.	White Popular	NI	POAL1
Populus angustifolia James	Narrow-leaved Cottonwood	2	POAN3
Populus deltoides Marsh.	Plains Cottonwood	3	PODE1
Populus x *acumunata* Rydb.	Hybrid Cottonwood	3	POAC1
Portulaca oleracea L.	Common Purslane	3	POOL1
Potamogeton pectinatus L.	Sago Pondweed	1	POPE3
Rosa arkansana Porter	Prairie Wild Rose	NI	ROAR1
Rumex mexicanus Meisn.	Willow-leaved Dock	3	RUME1
Rumex obtusifolius L.	Bitter Dock	3	RUOB1
Sagittaria latifolia Willd.	Common Arrowhead	1	SALA1
Salix, sp.	Willow	2	SAL1
Salix amygdaloides Anderss.	Peach-leaved Willow	2	SAAM1
Salix exigua Nutt.	Coyote Willow	1	SAEX1
Salsola iberica Senn. & Pau.	Russian-Thistle	4	SAIB1
Scirpus, sp.	Bulrush	1	SCI1
Scirpus americanus Pers.	Chair-maker's Rush	1	SCAM1
Scirpus maritimus L.	Prairie Bulrush	1	SCMA1
Scirpus pallidus (Britt.) Fern	Darkgreen Bulrush	1	SCPA1
Scirpus validus Vahl.	Great Bulrush	1	SCVA1
Scrophularia lanceolata Pursh.	Figwort	3	SCLA2
Setaria, sp.	Millet	3	SET1
Setaria glauca (L.) P. Beauv.	Smooth Bristle Grass	3	SEGL1
Setaria viridis (L.) Beauv.	Green Foxtail	3	SEVI1
Smilacina stellata (L.) Desf.	Spikenard	3	SMST1
Solidago canadensis L.	Canada Goldenrod	4	SOCA1
Solidago gigantea Ait.	Giant Goldenrod	2	SOGI1
Solidago missouriensis Nutt.	Prairie Goldenrod	4	SOMI1

Sonchus arvensis L. ssp. *arvensis* L.	Perennial Sow-thistle	3	SOAR1
Sorghastrum nutans (L.) Nash	Indian-grass	4	SONU1
Spartina pectinata Link	Prairie Cordgrass	2	SPPE1
Symphoricarpos occidentalis Hook.	Snowberry	4	SYOC1
Taraxacum officinale Weber	Dandelion	4	TAOF1
Toxicodendron rydbergii (Small ex Rydberg) Greene		Poison Ivy3	TORY1
Trifolium, sp.	Clover	4	TRI1
Trifolium pratense L.	Red Clover	4	TRPR1
Trifolium repens L.	White Clover	4	TRRE1
Typha, sp.	Cattail	1	TYP1
Typha angustifolia L.	Narrow-leaved Cattail	1	TYAN1
Typha latifolia L.	Common Cattail	1	TYLA1
Urtica dioica L.	Stinging Nettle	2	URDI1
Verbascum thapsus L.	Common Mullein	4	VETH1
Verbena bracteata Lag. & Rodr.	Bracted Vervain	4	VEBR1
Verbena hastata L.	Blue Vervain	2	VEHA1
VVeronica americana (Raf.) Schwein. ex Benth.	Brooklime	1	VEAM1
Veronica anagallis-aquatica L.	Water Speedwell	1	VEAN1
Veronica peregrina L.	Purslane Speedwell	1	VEPE1
Viola, sp.	Violet	?	VIO1
Xanthium strumarium L.	Cocklebur	3	XAST1

[1/] Nomenclature follows Flora of the Great Plains. Hydric status follows that of Reed (1988), except for changes in yellow avens (3). Species found not listed in Reed (1988) were assumed to be non indicators (NI). Key: 1=obligate; 2=facultative wet; (3) facultative; and (4) facultative upland.

APPENDIX B

WETLAND INVENTORY

ROCK CREEK DRAINAGE

ROCK CREEK DRAINAGE 1/									
Drain. Basin	Wetl. No.	Feature	Geomorphology	Vegetative Composition & Cover (%)	Hydroph. Status	Hydrologic Indicator	Soils Indicator	Wetl. Type	Acres
Trib. A1	1aa	Linear	Channel	JUBA (60%); COBBLE (20%);POPR(20%)	2.00, 1.6	Bed Dry	Not Det.	PEMA	0.01
25-Aug	1a	Point	Channel	JUBA(85%);POPR(10%);ACMI(5%)	3.00, 1.4	Surface Dry	Not Det.	PEMA	<0.004
	2a	Linear	Channel	JUBA(80%);CACA(10%);POCO(5%); EPLE(5%)	2.00, 1.3	Surface Dry	Not Det.	PEMC	0.07
	2b	Polygon	Overbank	Same as 2a	See 2a	See 2a	Not Det.	PEMC	0.014
	2c	Polygon	Chann./Overbank	SCAM(30%);CANE(20%);TYLA(30%); VEAM(5%);NAOF(5%);OBLIG. F. (5%)	1.00, 1.0	Surface Seep	Not Det.	PEMB	0.03
	3a	Polygon	Right Overbank	JUBA(80%);CIAR(20%);CACA(2%)	2.33, 1.61	Surface Dry	Not Det.	PEMC	0.06
	4a	Polygon	Backwater From Dam	TYLA(80%);JUBA(10%);CANE(10%)	1.00, 1.0	1 " Surface Water	Not Det.	PEMFh	0.15
	4b,4c	Polygons	Backwater From Dam	JUBA(80);CIAR(20%)	2.50, 1.6	Surface Dry	Not Det.	PEMCh	0.2
	4d	Polygons	Artificial Basin	TYLA(100%)	1.00, 1.0	Sat. in Upper 12 "	Not Det.	PEMBh	0.03
	4dd	Polygon	Artificial Basin	OPEN WATER (100%)	1.00, 1.0	< 4 ft. Depth	Not Det.	PUBHh	0.17
	4e	Polygon	Chann./Overbank	JUBA(70%);CANE(20%);CIAR(10%)	2.00, 1.3	Sat. in Upper 12"	Not Det.	PEMC	0.33
	4f	Polygon	Ch. Backwater from Dam No. 2	TYLA(50%);TYAN(50%)	1.00, 1.0	Sat. in Upper 12"	Not Det.	PEMFh	0.12
	4g	Polygon	Chann./Overbank	JUBA(60%);CAEM(20%);;HESP(10%); CAIN(5%);AGST(5%)	2.00, 1.30	Sat. in Upper 12"	Not. Det.	PEMC	0.41
	4h	Polygon	N. Aspect, Mid-Slope	JUBA(70%);CIAR(30%);CAPR(10%) HYPE(5%)	3.00, 2.0	Moist in Upper 12"	Not. Det.	PEMA	0.15
	4i,j,k,l.	Linear	Channel	JUBA(50%);CANE(20%);CIAR(20%) TYLA(10%);SCVA(2%); AGTR(3%)	2.00, 1.6	Bed Dry, Sat. in Upper 12 "	Not Det.	PEMC	1.36

1/ For natural "slope" wetlands, special hydrology (surface seepage) is indicated by an asterisk (*) inserted in the wetland number column. Special wetland types created or modified by impoundment (h), excavation (x), ditching (d) or artificial substrate (r) are shown in the wetland type column.

Trib A2									
25-Aug	5a	Polygon	Channel	JUBA(30%);AGST(20%);CIAR(30%)	2.00, 2.3	Bed Dry, Sat. in	Not Det.	PEMC	0.12
				CANE(15%)		Upper 12 "			
	5b,5c	Linear	Channel	TYLA(20%);CANE(30%);SCVA(20%)	1.00, 1.00	Surface Sat.	Not Det.	PEMB	0.03
				CAEM (20%)					
	5d	Polygon	Channel/Overbk.	See 5b,5c	1.00, 1.00	Surface Sat.	Not Det.	PEMB	0.02
Trib A1	6a	Polygon	N. Aspect, Mid.	JUBA(40%);CANE(20%);TYLA(10%)	1.57, 1.35	Flowing Water	Not. Det.	PEMB	0.42
			Slope	LYAM(10%);CIAR(10%);CAEM(5%)					
				MEAR(5%)					
	8a	Polygon	S. Aspect , Mid-	JUBA(40%);AGSM(20%);CIAR(20%)	3.20, 2.6	Surface Dry	Not Det.	PEMA	0.04
			Slope	CAR(10%);LASE(5%)					
	9a	Linear	S. Aspect,	JUBA(70%);POPR(10%);CIAR(15%)	3.25, 1.9	Surface Dry	Not Det.	PEMA	0.01
			Upper Slope	AGSM(5%)					
	10a	Point	S. Aspect,	CAPR(100%)	3.00, 3.0	Surface Dry	Not Det.	PEMA	<0.004
			Upper Slope						
	11a	Polygon	S. Aspect,	JUBA(30%);CAPR(20%);CIAR(20%)	3.29, 2.85	Surface Dry	Not Det.	PEMA	0.06
			Upper Slope	POA(10%);AGSM(10%);AGST(5%)					
				BRTE(5%)					
	11b,c	Points	S. Aspect,	JUBA(20%);CAPR(30%);CIAR(20%)	3.29, 3.05	Surface Dry	Not Det.	PEMA	<0.004
			Upper Slope	POA(10%);AGSM(10%);AGST(5%)					
				BRTE(5%)					
	12a	Linear	S. Aspect,	JUBA(60%);(SPPE(10%);(CAEM(10%)	2.29, 1.45	Surface Dry	Not Det.	PEMC	0.06
			Upper Slope	AGSM(10%);CIAR(5%);CANE(5%)					
				AGST(2%)					
Trib A3	1a	Polygon	Side Drainage	JUBA(50%);SPPE(20%);CIAR(20%)	2.67, 2.04	Bed Dry, Sat in	Not Det.	PEMC	0.13
			Chann., Upper Sl.	CANE(5%);AGSM(5%);HYPE(5%)		Upper 12"			
	2a	Polygon	Lower Channel	See 4 i,j,k,l above	See 4 i,j,k	Surface Dry	Not Det.	PEMC	0.46
	3a	Linear	Lower Channel	No data	No data	Surface Dry	Not Det.	PEMA	0.009
Trib C	1a*	Point	S. Aspect, Lower	AGST(30%);CANE(20%);VEHA(10%)	2.33, 2.25	Flowing Water	Not. Det.	PEMB	0.05
Aug. 26			Slope	JUIN(10%);NAOF(5%);HYPE(2%)					
	2b*	Polygon	S. Aspect, Mid-	,TYLA(65%);CANE(10%);NAOF(10%);	1.88, 1.34	Flowing Water	Not. Det.	PEMB	0.22
			Slope	CIAR(5%);MEAR(5%);HYPE(5%);					
				SCVA(1%);EPLE(1%)					

Trib C	3a	Polygon	S. Aspect, Lower	SAEX(80%);SYOC(10%);CIAR(5%)	3.20 1.59	Sat. in Upper 12"	Not Det.	PSSC	0.15
			Slope	CAR(5%);HYPE(2%)					
	4*	Polygon	S. Aspect, Mid-	JUBA(40%);CANE(20%);CIAR(15%)	1.63, 1.5	Flowing Water	Not Det.	PEMB	0.44
			Slope	SCPA/SCVA(5%);SAEX(5%);BAOR(2%)					
				TYLA(5%);Other OBLIG FORBS(5%)					
	5*	Polygon	S. Aspect, Mid-	JUBA(60%);CANE(10%);CIAR(10%)	1.75, 1.3	Variable: Some	Not Det.	PEMC	0.21
			Slope	TYLA(5%)		Flowing, or Sat.	(PEMB Inclus.)		
	6*	Polygon	S. Aspect, Mid-	JUBA(30%);CANE(25%);TYLA(25%);	1.67, 1.35	Flowing Water	Not Det.	PEMB	0.24
			Slope	CIAR(10%);SPPE(5%);AMFR(5%)					
				OBL FORBS (5%)					
	7a&7b	Polygons	S. Aspect, Upper	7a-EQU(60%);7b-JUBA(60%)	2.50; 2.50	Dry in Upper 12"	Not Det.	PEMA	0.02
			Slope						
	7c	Polygon	S. Aspect, Upper	JUBA(40%);CIAR(20%);GLLE(10%)	3.50, 2.8	Dry in Upper 12"	Not Det.	PEMA	0.27
			Slope	AGSM(20%);POA(10%);HYPE(2%)					
Trib.CD	8a	Polygon	S. Aspect, Upper	JUBA(40%);CIAR(15%);CANE(10%)	2.57, 2.05	Surface Dry	Not Det.	PEMC	0.6
			Slope	ASIN(10%);AGST(5%);AGSM(10%)					
Aug. 26				HYPE(5%)					
	9a	Polygon	S. Aspect, Lower	JUBA(40%);CANE(20%);CIAR(20%)	2.38, 2.01	Surface Moist	Not Det.	PEMB	0.4
			Slope	ASIN(5%);TYLA/SCPA(5%);ASC1(5%)					
				HYPE(5%);XAST(1%)					
	11a	Polygon	Chann./Overbank	SAEX(80%);AMFR(5%);POA1(5%)	2.00, 1.1	1-10" Depth in	Not Det.	PSSC	0.66
				HESP(1%)		Flowing Channel			
	12a	Polygon	Chann./Overbank	SAEX(50%); AMFR(50%)	1.00, 1.0	Surface Moist	Not Det.	PSSC	0.44
Trib. C	10c	Linear	Channel	JUBA(30%);CIAR(10%):HYPER(10%)	3.29, 2.40	1-2" Flowing	Not. Det.	PEMB	0.18
Aug.27				AGST(5%);RUME(2%);VER2(2%)		Water			
				NECA)2%)					
	10d	Linear	Channel	SAEX(50%);PODE(5%);AMFR(10%)	1.40, 1.11	1-2" Flowing	Not Det.	PSSC	0.5
				TYLA(10%);OBL. FORB/SEDGE(20%)		Water			
	12a.b	Polygon	Chann./Overbank	JUBA(40%);CANE(10%);GLY1(10%);	1.67, 1.52	1-3" Flowing	Not Det.	PEMB	0.12
				LYAM(10%);SCAT(5%);BAOR(5%)		Water			
				NAOF(5%);TYLA(5%);VEHA(2%)					
	15a	Polygon	Channel Upst.	JUBA(50%);POCO(20%;AGSM(20%)	3.00, 2.4	Dry, Upstream of	Not Det.	PEMA	0.009
			RR Embank.	AGST(10%)		Embankment			
	15b	Linear	Channel	COB/GVL(20%);JUBA(20%);POCO(20%)	2.17, 2.1	Dry	Not Det.	PEMA	0.03
				AGST(10%);Moss(10%);ANGE(10%)					

Trib. C	15c	Linear	Channel, Above	JUBA(40%);AGCA(10%);AGST(10%)	2.63, 2.07	Surface Dry	Not Det.	PEMA	0.28
			Main N-S Road	POCO(10%);SYOC(10%);CANE(5%)					
				RUAC(2%);COBBLE(20%)					
Trib CD	13ab*	Polygons	NW Aspect, Mid-	TYLA(40%);CANE(15%);JUBA(15%)	1.75, 1.53	1-2" Flowing	Not Det.	PEMB	0.25
Aug.27	(partly drained)		Lower Slope	CIAR(15%)		Water			
	14a	Linear	Ditch/Rill, Mid-	See 13 ab	See 13ab	See 13ab	Not Det.	PEMB	0.01
			Slope						
	15a	Polygon	NW Aspect, Mid-	JUBA(90%);CANE(2%)	1.00, 1.0	Surface Dry	Not Det.	PEMC	0.05
			Slope						
	16a	Point	NW Aspect, Mid-	JUBA(90%);CIAR(2%);SYOC(2%)	2.33, 1.13	Surface Dry	Not Det.	PEMC	0.02
			Slope						
	17a	Polygon	NW Aspect, Mid-	JUBA(55%);CIAR(30%);POPR(5%)	3.25, 2.21	Surface Dry	Not Det.	PEMA	0.05
			Slope	SYOC(2%)					
	18a	Point	NW Aspect, Mid-	JUBA(70%);CIAR(20%);LAT1(2%)	3.00, 2.4	Surface Dry	Not Det.	PEMA	0.01
			Slope						
Trib. D									
27-Aug	1b	Point	Channel	SAEX(20%);AMFR(50%);COB/GVL(30%)	1.00, 1.0	Flowing Water	Not Det.	PSSC	0.33
	2a	Polygon	NW Aspect, Mid-	JUBA(60%);CIAR(30%);CANE(5%);	2.00, 1.9	Drainage Pattern	Not Det.	PEMA	0.51
			Slope	SPPE(2%)					
	2aa	Polygon	D1 & D2 Ch. Con-	SOGI(50%);CANE(30%);TYLA(5%);	1.40, 1.53	Saturated:Stand-	Not Det.	PEMB	0.12
			fluence-Delta	AMFR(10%);HESP(1%)		ing Water			
	2b	Polygon	NW Aspect, Mid-	CANE(60%);CIAR(30%);CAEM(5%)	2.00, 1.95	Saturated in	Not Det.	PEMC	0.09
			& Lower Slopes			Upper 12 "			
	3a	Polygon	NW Aspect,	JUBA(75%);AGST(8%);CIAR(8%);	2.50, 1.4	Drainage Pattern	Not Det.	PEMC	0.25
			Lower Slope	CANE(4%);GLLE(1%);SOGI(1%)					
	3aa	Linear	Along Left Bank	JUBA(60%);CANE(5%);CIAR(35%)	2.00, 2.0	Drift Lines/Drain.	Not Det.	PEMC	0.13
			of Channel			Pattern			
	4aa	Polygon	Widened Area	AMFR(80%);JUBA(10%)	1.00, 1.0	Drain Pattern	Not Det.	PSSA	0.2
			of Scrub in Chan.						
Trib. D1									
Aug.27	1a	Polygon	Channel:D1-D2	AMFR(70%);ACNE(10%);SAEX(5%);	1.00, 1.0	Standing Water	Not Det.	PSSC	0.12
			Conf. to Upstream	SCPA(1%)					

Trib.D1	1b	Polygon	Channel:point a	AMFR(95%);SOGI(1%);SCPA(1%)	1.33, 1.02	Standing Water	Not Det.	PSSC	0.03
Aug.27			to point b						
	1c	Linear	Channel:point b	ACNE(80%);AMFR(10%);SAEX(5%);	2.25, 2.71	Flowing Water	Not Det.	PFOC	0.11
			to point c	TORY(2%)					
	1d	Polygon	Widened Channel	SOGI(50%);CANE(5%);JUBA(10%)	1.63, 1.70	Standing/Flowing	Not Det.	PEMB	0.1
			Area	ASIN(8%);TYLA(5%);URDI(5%)		Water			
				CIAR(2%);SCPA(2%)					
	1dd	Polygon	Channel	SAEX(40%);CANE 10%);JUBA(10%);	1.00, 1.0	Standing/Flowing	Not Det.	PSSC	0.14
				AMFR(20%)		Water			
	1e	Polygon	Channel:Opening	CANE(15%);JUBA(20%);SOGI(20%);	1.80, 1.76	Sat. In upper 12";	Not Det.	PEMB	0.01
			within PSSC	SAEX(15%);CIAR(15%)		Water Marks			
	1ee	Point	Channel	JUBA(90%)	1.00, 1.0	In and Along	Not Det.	PEMA	0.06
						Channel			
	1f	Point	Backwater effect	ELMA(30%);UNCONS.BOTTOM(30%)	1.00, 1.0	Water Marks;	Not Det.	PUBFh	0.01
			from embankment			Sed. Deposits			
	1g	Polygon	Channel	JUBA(60%);POCO(20%);AGSM(10%)	2.50, 1.9	Scour Hole Below	Not Det	PEMA	0.05
				GVL/COBBLE(10%)		RR. Embank.			
Trib. D2									
Aug.30	1a&b	Polygons	Channel	JUBA(50%);POCO(10%);CIAR(20%)	3.00, 2.39	Drainage Pattern	Not Det.	PEMA	0.06
				AGSM(10%);PHPR(2%);CANE(1%)					
				BAOR(5%)					
	1c	Polygon	Pool zone above	ELMA(20%);XAST(20%);AMPS(20%)	2.50 2.30	Deep Pool When	Not Det.	PEMCh	0.37
			dam	JUBA(10%);HOJU(5%);AGST(5%);		Full			
				BUDA(5%);RUME(1%)					
	1d	Polygon	Pool	OPEN WATER (100%)	1.00, 1.00	Ponded Water	Not Det.	PUBHh	<0.004
	2a	Polygon	Seep below dam	JUBA(60%);CANE(10%);CIAR(30%)	2.00, 1.9	Drain. Channel	Not. Det.	PEMC	0.19
	3a	Polygon	Chann./Overbank	JUBA(40%);CANE(10%);UNCONS.	2.38, 1.94	Surface Dry	Not Det.	PEMC	0.65
				BOTTOM(10%);AGST(5%);POAM(trace)					
				POCO(10%);AGSM(10%);GLLE(5%)					
	3b,c,d,	Points	Channel Scour	UNCONS.BOTTOM(90%);ALSU(5%);	1.40, 1.0	Water Marks;	Not Det.	R4SBC	0.03
	e,f,g		Holes	ELAC/ELMA(5%);Algal Mats(60%);		Algal Mats			
				RUME(1%)					

Trib D2	4a,b,c	Points	Channel	JUBA(60%);AGSM(20%);POCO(10%)	3.20, 2.15	Surface Dry	Not Det.	PEMA	0.02
				AGST(5%);CIAR(5%)					
Aug. 30									
	5a	Linear	Channel	ELMA/ELAC(30%);JUBA(20%);UNCONS	2.50, 2.1	Surface Dry	Not Det.	PEMC	0.09
				BOTTOM(10%);AGSM(20%);POCO(10%)					
				SYOC(5%)					
	6a	Linear	Channel	ELMA/ELAC(20%);JUBA(30%);UNCONS	2.50, 2.1	Surface Dry	Not Det.	PEMC	0.09
				BOTTOM(10%);AGSM(20%);POCO(10%)					
				SYOC(5%)					
	7a	Linear	Channel	JUBA(50%);POPR/POCO(20%);AGTR	3.40, 2.42	Surface Dry	Not Det.	PEMA	0.04
				(10%);AGSM(10%);CIAR(5%)					
	7b	Polygon	Channel	JUBA(50%);SPPE(10%);AGSM(10%);	3.17, 2.30	Surface Dry	Not. Det.	PEMA	0.5
				POPR/POCO(10%);GLLE(10%);CIAR(10%)					
	7c,d,e,	Points	Scour Holes in	ALGAL MATS/UNCONSOL.(60%)	1.00, 1.0	Surface Dry	Not Det.	R4SBC	0.02
	f,g		Channel	MISC. ANNUALS(40%)					
	8a	Polygon	Widened Channel	CANE(30%);CAEM(10%);JUBA(10%)	2.00, 1.9	Sat. In upper 10"	Not Det.	PEMC	0.12
			Low Grade	BAOR(5%);SPPE(5%);RUME(5%);					
				CIAR(20%);POAM(5%)					
	9a	Point	Widened Channel	CANE(40%);SCVA/SCPA(10%);CAEM	1.44, 1.19	1-2" Flowing	Not Det.	PEMB	0.23
			Low Grade	(5%);POAM(5%);LEMI(2%);ASIN/CIMA		Water			
				(2%);SOGI(5%);CIAR(5%);GLY1(1%)					
	9b	Linear	Left Bank, along	JUBA(60%);GLLE(10%);CIAR(15%);	3.50, 2.32	Surface Dry	Not. Det.	PEMA	0.06
			Channel	ROAR(10%);AGTR/AGSM(10%);					
				HYPE(2%)					
	10a	Polygon	Widened Channel	TYLA(20%);CANE(20%);JUBA(10%);	1.20, 1.1	2-3" Flowing	Not. Det.	PEMB	0.14
			Low Grade	LYAM(10%);SOGI(10%);CIMA(5%);		Water			
				LEMI(5%);HESP(5%);NAOF(5%);SCVA(5%)					
Trib. E1									
Aug. 30	1a	Polygon	Along Channel	JUBA(60%);AGST(5%);POCO(20%);	3.00, 2.1	Surface Dry;	Not Det.	PEMA	0.42
			(partly filled)	CIAR(10%);ANGE/PAVI(5%)		Drainage Patt.			
	2a	Polygon	Along Channel,	TYLA(80%);JUBA(10%);AGST(5%)	1.67, 1.11	Sat . In upper 10"	Not Det.	PEMFx	0.03
			Edge-Borrow Pit						
	2b	Polygon	Borrow Pit	OPEN WATER (100%)	1.00, 1.0	2-3 ft Depth, Stand-	Not Det.	PUBHx	0.02
						ing Water			

Trib.E2									
Aug.31	7k	Polygon	Channel	TYLA(90%);JUBA(10%)	1.00, 1.0	Sat. in upper 10"	Not Det.	PEMF	0.03
	7l	Point	Channel	UNCONS.BOTTOM(70%);ALSU(30%)	1.00, 1.0	Surface Sat.	Not Det.	R4SBC	<0.002
	7m	Point	Channel	ALGALMAT(95%);GLY1(5%)	1.00, 1.0	Surface Flooded	Not Det.	R4SBC	<0.002
RCB									
Rock Cr	1a	Polygon	Channel; Seep	JUBA(70%);AGST(5%);CANE(2%);	2.6, 1.83	Algal Mats in Ch.	Not Det.	PEMA	0.64
Mainstem			Below Dam	CIAR(20%);AGSM(5%)		Below Dam			
above									
Lindsey	1b	Polygon	Lower Slope,	JUBA(60%);CANE(5%);CIAR(10%);	2.50, 1.7	Snowbank Aug.	Not Det.	PEMA	0.14
31-Aug			S.Aspect	AGSM/AGCA(10%);					
	1c	Polygon	Entering Draw	JUBA(60%);CIAR(10%);AGSM/AGCA(10%)	3.00, 1.7	Snowbank Aug.	Not Det.	PEMA	0.05
			from S. Slope						
	1dd	Linear	Channel	UNCONS.BOTTOM(70%);ALGAL	1.00, 1.0	Algal Mats	Not Det.	R4SBC	0.03
				MATS(30%)					
	1d	Polygon	Chann./Overbank	JUBA(70%);CAR1(5%);CIAR(15%);	3.00, 1.8	Drain .Pattern	Not Det.	PEMA	0.21
				OTHER UPL.(10%)					
	1e,1f,	Pts.1e&f,	Channel	SPPE(50%);JUBA(40%);CAR1(5%);	2.50, 1.7	Drain. Pattern	Not Det.	PEMC	0.072
	2a	Polyg. 2a		CIAR(5%)					
	3a	Polygon	Lower Slope SE	JUBA(60%);SPPE(20%);CIAR(10%);	2.75, 1.8	Surf. Dry, but tiny	Not Det.	PEMA	1.43
			Aspect	ASSP/GLLE(10%)		PEMC inclus.			
	3b	Polygon	Lower Slope NW	JUBA(60%);SPPE(15%);CIAR(15%);	2.75, 1.9	Surf. Dry, but	Not Det.	PEMA	1.37
			Aspect	HYPE/GLLE(10%)		Channel Pattern			
	3c	Polygons	Chann./Overbank	TYLA(10%); Others as in 3b	2.40, 1.8	Surf. Dry, but	Not Det.	PEMC	0.21
		(three)				Channel Pattern			
	3d,h,i,j	Polygons	Chann./Overbank	TYLA(80%);SCVA(5%);BAOR(15%)	1.67, 1.3	Surf. Sat in upper	Not Det.	PEMB	1.26
						10"			
	3m	Polygon	Chann./Overbank	See 3 c	2.40, 1.8	Surface Dry, but	Not Det.	PEMC	0.64
						Channel Pattern			
	3 e,f,g	Points	Channel Scour	ALGAL MATS(80%);ALSU(5%);ELAC	1.00, 1.0	Surf. Sat in upper	Not Det.	R4SBC	0.042
	n		Holes	(10%);ELMA(2%)		10"			
	3k	Point	Channel	TYLA(100%)	1.00, 1.0	Surface Sat.	Not Det.	PEMB	0.004

RCB									
Oct. 31	3o	Point	Channel Scour	UNCONS.BOTTM(100%)	1.00, 1.00	Sat . at Surface	Not Det.	R4SBC	0.006
Above			Hole						
Lindsey	3p	Point	Scour Hole	TYLA(100%)	1.00, 1.00	Sat. at Surface	Not Det.	PEMB	0.04
Ranch									
Road	3 q	Point	Channel Mosaic	UNCONS.BOTTM(33%);OBLIG.VEG	1.00, 1.0	Standing/Running	Not Det.	R4SBC	0.13
		to Road	of Scour Holes	(33%);OPEN WATER(33%)		Water			
Below									
Lindsey									
Ranch	4a*,	Polygons	Upper Slope,	TYLA(60%);JUBA(10%);LYAM(5%);	1.50, 1.1	Standing Water,	Not Det.	PEMB	0.7
Road	5d*		NW Aspect	BAOR(5%)		1-2"			
Sept. 1									
	4b*,	Linear	Upper Slope,	See above; wetland partly drained	1.50, 1.1	Flowing Water	Not Det.	PEMBx	0.02
	4c*		NW Aspect						
	5a	Polygon	Mid Slope, NW	JUBA(70%);CIAR(10%); UPLAND	3.00, 1.9	Surface Dry	Not Det.	PEMA	0.38
			Aspect	GRASSES (20%)					
	5b,	Polygon	Mid-Lower Slope,	JUBA(70%);CANE(10);BAOR(5%);OBLIG	1.80, 1.2	Surface Dry	Not Det.	PEMC	0.51
	joins 5a & 5c		NW Aspect	FORBS(10%);VIO1(5%)					
	5 c*	Polygon	Mid Slope, NW	TYLA(60%);JUBA(30%);CANE(5%);	1.00, 1.0	Saturated, &	Not Det.	PEMB	0.4
			Aspect	OBLIG.FORBS(5%)		Standing Water			
	5e,	Polygon	Mid-Lower Slope,	Same as 5b	1.80, 1.2	Surface Dry	Not Det.	PEMC	0.47
	joins 5u &5b		NW Aspect						
	5g	Polygon	Mid-Lower Slope,	JUBA(70%);CANE(10%);LYAM(5%);	1.80, 1.3	Drain. Pattern	Not Det.	PEMC	1.46
			NW Aspect	BAOR(5%);CAR1(10%)					
	5h	Polygon	Lower Slope, N.	JUBA(60%);BAOR(5%);CIAR(10%);	3.20, 2.0	Drain. Pattern	Not Det.	PEMA	0.17
			Aspect	AGSM/POPR(10%);UPL.FORBS(10%)					
	5i	Polygon	Channel, Below	TYLA(40%);JUBA(30%);BAOR(10%);	1.40, 1.2	Standing Water	Not Det.	PEMB	2.17
			Dam	LEMI(5%);CANE/CAEM(15%)		6" Depth; Seepage			
	5j	Polygon	NW Aspect, Mid-	TYLA(50%);JUBA(30%);LYAM/MEAR	1.40, 1.1	Surface Sat.,	Not Det.	PEMB	0.5
			Slope	(10%);AGST(5%);MOSS/WATER(6%)		Hummocky			
	5k	Polygon	NW Aspect,	JUBA (70%);CANE(10%);BAOR (5%);	1.80, 1.3	Drain. pattern	Not Det.	PEMC	1.1
			Lower Slope	CAR1 (10%); OBLIG FORBS (5%)					

RCB	5l	Polygon	NW Aspect,	JUBA(50%);CANE(5%);CIAR(10%);	3.14, 2.3	Surface Dry	Not Det.	PEMA	0.07
Main-			Lower Slope	HYPE(5%);AGSM(20%);ASER/ASSP					
Stem				(5%);POPR(5%)					
	5m	Polygon	Mid Slope, NW	JUBA(80%);CIAR(10%);UPI.SP(10%)	3.00, 1.6	Surface Dry	Not Det.	PEMA	0.37
Sept. 1			Aspect						
	5n	Polygon	Mid Slope, N.Asp.	JUBA(50%);AGSM/POPR(40%);	3.00, 2.42	Surface Dry	Not Det.	PEMA	0.03
				HYPE(5%)					
	5 o	Linear	See 5n	See 5 n	See 5n	Surface Dry	Not Det.	PEMA	0.01
	6a	Polygon	Upper Slope,	TYLA(40%);CANE(20%);JUBA(20%);	1.50, 1.16	Sat. in upper 12"	Not Det.	PEMB	0.01
			NW Aspect						
	6b	Polygon	NW Aspect	VEHA(5%);LYAM(5%);BAOR(5%)	1.50, 1.16	Sat in upper 12"	Not Det.	PEMB	0.01
			Upper Slope						
	6e	Polygon	See 6b	Large complex, same as 6a & 6b	1.50, 1.16	Sat. in upper 12"	Not Det.	PEMB	1.13
	6f	Polygon	Upper Slope,	SPPE(40%);JUBA(20%);GABO(10%);	2.80, 2.24	Surface Dry	Not Det.	PEMA	0.05
			NW Aspect	CIAR(10%);SYOC(5%)					
	6c	Polygon	Mid Slope, NW	JUBA(80%);CANE(10%);CAR1(5%);	2.25, 1.25	Surface Dry, but	Not Det.	PEMC	0.11
			Aspect	CIAR(5%)		Channel Pattern			
	6d	Polygon	Upper Slope, N.	JUBA(60%);AGSM/POPR(10%);	3.00, 2.20	Surface Dry	Not Det.	PEMA	0.44
			Aspect	CIAR(30%)					
	6i	Polygon	Lower Slope, NW	JUBA(50%);SPPE(20%);CANE(10%);	2.50, 1.43	Surface Dry	Not Det.	PEMC	0.25
			Aspect	VEHA(2%);CIAR(5%)					
	6j	Polygon	Lower Slope, NW	TYLA(80%);JUBA(10%);AGST(10%)	1.67, 1.20	Drain. Pattern	Not Det.	PEMC	0.06
			Aspect	CIAR(trace)					
	6k	Polygon	Upper Slope, NW	JUBA(80%);CIAR/ASSP(20%)	2.50, 1.60	Drain. Pattern	Not Det.	PEMC	0.53
			Aspect						
	6l	Polygon	Upper Slope, NW	JUBA(75%);LYAM(10%);CANE(5%);	1.50, 1.17	Sat. in upper 12"	Not Det	PEMB	0.01
			Aspect	BAOR(5%)		Drain Pattern			
	6mm	Polygon	Upper Slope, NW	JUBA(40%);CANE(10%);CIAR(10%);	2.80, 2.13	Surface Dry	Not Det.	PEMA	0.05
			Aspect	POPR(10%);SYOC(10%)					

RCB									
Main-	6n	Point	Upper Slope, NW	JUBA(95%)	1.00, 1.00	Surface Dry	Not Det.	PEMC	0.001
stem			Aspect						
	6o	Polygon	Upper Slope, NW	JUBA(30%);CANE(20%);CAPR(20%);	2.60, 2.21	Surface Dry	Not Det.	PEMA	0.04
			Aspect	CIAR(15%);POPR(10%)					
Sept. 1									
	6p	Polygon	Upper Slope, NW	JUBA(35%);SPPE(35%);ASIN(5%);	2.00, 1.55	Drain. Pattern	Not Det.	PEMC	0.4
			Aspect	CANE(5%);TYLA(1%);CIAR(2%);					
				POPR(2%)					
	6q	Polygon	Upper Slope, NW	CANE(30%);ASIN(20%);JUBA(20%);	1.29, 1.22	Surface Sat.	Not Det.	PEMB	0.12
			Aspect	ELE1(10%);SAG1(2%);TYLA(1%);					
				BAOR(10%)					
	6r	Polygon	Upper Slope, NW	JUBA(55%);CANE(15%);CIAR(20%;	2.50, 1.90	Surface Dry	Not Det.	PEMA	0.06
			Aspect	POPR(10%);					
	6ss	Polygon	Lower Slope, NW	AGST(85%);JUBA(5%);AGSM(5%)	3.00, 3.00	Surface Dry	Not Det.	PEMA	0.62
			Aspect-Slump	POPR(5%)					
	6t	Polygon	Lower Slope, NW	JUBA(60%);CANE(5%);LYAM(5%);	2.00, 1.53	Surface Dry	Not Det.	PEMA/	0.48
			Aspect	TYLA(5%);AGST(5%);ASSP(5%);				PEMC	
				CIAR(10%);					
	6u	Polygon	Lower Slope, NW	JUBA(85%);CIAR(5%);HYPE(5%);	3.40, 1.50	Surface Dry	Not Det.	PEMA	0.02
			Aspect	SYOC(4%);OTHER UP.FORBS(3%)					
	6v	Polygon	Lower Slope, NW	JUBA(50%);SPPE(5%);ASSP(10%);	2.50, 1.85	Surface Dry	Not Det.	PEMC	0.71
			Aspect	GLLE(10%);SYOC(10%);CANE(15%)					
	6x	Polygon	Channel., Left	JUBA (50%); SYOC (10%);AGSM (10%	3.33, 2.72	Surface Dry	Not Det.	PEMA	0.02
			Overbank	CIAR (5%); CANE (5%);GLLE (10%)					
	7a,	Point	Channel Pond	OPEN WATER(30%);ALGAE(70%)	1.00, 1.00	Water Depth 1.5'	Not Det.	PABH	0.007
	ds road								
	7b	Point	Channel Pond	OPEN WATER (70%); ALGAE(30%)	1.00, 1.00	Water Depth 1-3'	Not Det.	PABH	0.07
Sept. 2	7c	Polygon	Chann. Overbank	JUBA (50%);AGSM(20%);CIAR(10%)	3.00, 2.3	Surf. Dry	Not Det.	PEMA	0.21
				HYPE (5%);GLLE (10%);SPPE (5%)					
	7cc	Polygon	Left Overbank	TYLA(75%);JUBA(8%);CANE(10%);	2.42, 1.15	Running Water,	Not Det.	PEMB	0.01
				JUIN(1%);BAOR(2%);CIAR(2%);		3'wide&1-6"deep			
				GLLE(1%)					

RCB	7d	Point	Pond, behind dam	OPENWATER(30%);POPE(70%)	1.00, 1.00	Water Depth to	Not Det.	PABHh	0.44
			embankment			5,5'			
Sept. 2									
	7ee,	Polygons	Upper Slope,	JUBA(75%);TYLA(2%);ASSP(1%);	2.83, 1.52	Drain. Pattern	Not Det.	PEMC	0.7
	7f,7ff		SE Aspect	CIAR(10%);HYPE(10%);GLLE(3%)					
	7g	Polygon	Upper Slope, SE	JUBA(65%);POCO(10%);CIAR(10%);	3.40, 1.95	Drain. Pattern	Not Det.	PEMA	0.08
			Aspect	HYPE(5%);AGSM(5%)					
	7h	Polygon	Channel	SAEX(90%);JUBA(10%)	1.00, 1.0	Drain. Pattern	Not Det.	PSSC	0.2
	7hh	Polygon	Left Channel	No data	No data	No data	Not Det.	PEMA	0.02
			Overbank						
	7j	Polygon	Channel Bendway	JUBA (60%);LYAM (10%);CIAR (10%);	1.75, 1.3	Drain. Pattern	Not Det.	PEMC	0.05
				CANE (10%)					
	7k	Point	Channel	Same as 7 j	See 7j	Drain Pattern	Not Det.	PEMC	0.01
	7l	Polygon	Channel Bendway	JUBA(55%);CANE(20%);SPPE(5%);	2.67, 1.69	Adj.to Channel	Not Det.	PEMC	0.08
				CIAR(10%);HYPE(10%);SYOC(2%)					
	7mm	Polygon	In/around Chann.	TYLA(80%);CANE(10%);OBLIG.Forbs	1.00, 1.00	Surface Sat.	Not Det.	PEMB	0.73
	7nn	Polygon	Upper Slope, SE	JUBA(60%);CANE(20%);CAEM(5%);	1.83, 1.25	Drain. Pattern;	Not Det.	PEMC	0.49
			Aspect	BAOR(5%);OBLIG.FORBS(5%);CIAR(5%)		Surf. Hummocky			
	7o,p,q,	Polygons	Mid-Lower Slopes	JUBA(80%);ASSP(2%);AGSM(10%);	3.20, 1.56	Drain. Pattern	Not Det.	PEMA	0.19
	r		SE Aspect	CIAR(5%);HYPE(2%)					
	7s,t	Points	Lower Slopes, SE	Same as Above	3.20, 1.56	Surf. Dry	Not Det.	PEMA	0.02
			Aspect						
	7v	Polygon	Stream Banks/	JUBA(50%);SPPE(10%);ASSP(15%);	2.29, 1.70	Channel Pattern	Not Det.	PEMC	0.1
			Channel	CIMA(5%);GEAL(5%);LYAM(3%);					
				CIAR(5%)					
	7w,x,y	Polygons	Channel	TYLA(100%)	1.00, 1.00	Flowing Water	Not Det.	PEMB	0.69
	to road								
	8a	Polygon	Chann./Overbank	SAEX (50%); AMFR(30%); TYLA (5%);	1.00, 1.00	Flowing Water	Not Det.	PSSC	0.2
				OPEN WATER (5%)					
RCBCD									
	1a	Polygon	Channel/Banks	SAEX/AMFR(60%);UNCONSOLIDATED	1.00, 1.0	Flowing/Standing	Not Det.	PSSC	1.49
				BOTTOM (40%)		Water			

Trib. F	1a,d	Polygons	Upper Trib.,NW	JUBA(60%);BAOR(5%);SPPE(2%);	3.22, 2.13	Surface Dry	Not Det	PEMA	a=0.03
above			Aspect, Up.Slope	AGSM(10%);CIAR(10%);SYOC(5%);					d=0.87
road									
				POPR(5%);ROAR(3%);GEAP/HYPE(2%)					
	1b,f,e	Polygons	Upper Trib,NW	CANE(40%);BAOR(20%);JUBA(10%);	1.29, 1.48	Surface Dry, But	Not Det.	PEMC	0.03
			Aspect,LowSlope	LYAM(5%);EPCI(5%);CAEM(2%);ASIN(1%)		Hummocky			0.02
Sept.22									0.08
	1c	Polygon	Channel	TYLA(75%);CANE(10);LYAM/EPCI(5%);	1.00, 1.08	Flowing Water,	Not Det.	PEMB	0.16
				MEAR(2%);BAOR(5%);JUTO(1);LEMI		1-2"			0.1
				(2%);OPEN WATER(1%)					0.27
	2a,2f	Polygon	Mid-Lower Slope,	JUBA (55%);CANE(6%);BAOR(10%);	3.10, 1.8	Surface Dry	Not Det.	PEMA	1.58
ds of			NW Aspect	CIAR (5%);POPR(5%);SYOC(5%);					
road				HYPE(5%);ROAR(2%);SPPE(1%);					
				AGSM(2%)					
	2b	Polygon	Mid Slope, NW	CANE(60%);ASIN(10%);JUBA(10%);	1.29, 1.1	Surf. Sat in Upper	Not Det.	PEMC	0.04
			Aspect	CAEM(5%);EPCI/LYAM/MEAR(5%);		10"; Hummocky			
				JUTO(1%);BAOR(5%)					
	2c	Polygon	Upper Slope,	See 2b	See 2 b	See 2 b	Not Det.	PEMC	0.007
			NW Aspect						
	2e	Polygon	Upper Slope,	See 2b	See 2b	See 2b	Not Det.	PEMC	0.16
			NW Aspect						
	2d*	Polygon	Upper-Mid Slope,	TYLA(20%);JUBA(20%);CANE(10%);	1.22, 1.10	Surface Water	Not Det.	PEMB	0.17
			NW Aspect	ASIN(10%);ELE1(10%);BAOR(10%);		Present			
				MOSS(3%);JUTO(1%);SCAM(2%)					
	2g*	Point	Mid Slope, NW	CANE(60%);OBLIG FORBS(20%);	1.00, 1.00	Surf. Water	Not Det.	PEMB	0.007
			Aspect	ASIN(5%);GLY1(1%)		Present			
	2h	Polygon	Mid Slope, NW	JUBA(50%);CANE(12%);BAOR(10%);	2.00, 1.36	Surf. Dry, Some-	Not Det.	PEMC	0.17
			Aspect	GEAP(5%);ASIN(5%);MEAR/LYAM		what Hummocky			
				(5%);JUTO(1%);CIAR(2%)					
	2i	Polygon	Mid Slope, NW	CANE(70%);JUBA(10%);CAEM(5%);	1.50, 1.20	Sat. In upper 12"	Not Det.	PEMB	0.007
			Aspect-slumping	BAOR(10%)		Drain. Pattern			
	2j	Polygon,	Lower Slope, NW	ELE1(95%);BAOR(5%)	2.00, 1.10	Water Marks on	Dk. Brn. Surf.	PEMC	0.03
			Aspect			Edge of Depress.	Soil; No Gley		

Trib F									
	2k	Polygon	Stream overbank	JUBA(60%);BAOR(5%);SYOC(20%);	3.16, 2.00	Not Sat in upper	Dk.Brn Surf;	PEMA	0.04
				SCLA(5);MOFI(5%);CIAR(5%)		12"	No Gley		
	2l	Polygon	Streambank	JUBA(55%);CANE(2%);SPPE(2%);	2.75, 1.55	Surface Dry	Not Det.	PEMA	0.1
Sept.22				SYOC(20%);BAOR(5%);CIAR(2%)					
				SCLA(5):MOFO(5%)					
	2m	Polygon	Mid-Slope,,NW	JUBA(60%);GLLE(20%);SYOC(5%);	3.40, 2.10	Surface Dry	Not Det.	PEMA	0.15
			Aspect	CIAR(5%);POPR(5%)					
	2n*	Polygon	Mid-Lower Slope,	JUBA(60%);CANE(20%);CAEM(5);	1.30, 1.05	Flowing Water	Not Det.	PEMB	1.3
			NW Aspect	ASIN(5%);TYLA(5%);SCVA(1%);					
				GEAP(2%); NAOF(small bed)					
	2 o	Polygon	Mid Slope, NW	JUBA(60%);SPPE(10%);CANE(5%);	2.20, 1.38	Surface Dry, Part	Not Det.	PEMC	0.4
		N.fence	Aspect	BAOR(5%);CIAR(5%)		Hummocky			
	2p	Polygon	Upper Slope, NW	AMFR(60%);JUBA(20%);ASIN(10%);	1.00, 1.0	Surface Sat.	Not Det.	PSSC	0.14
			Aspect	CANE(5%)					
	2q	Polygon	Upper Slope, NW	AMFR (60%);JUBA(20%);ASIN(10%);	1.60, 1.1	Surface Sat.	Not Det.	PSSC	0.02
			Aspect	CANE(5%);HYPE(5%)					
	3a*	Point, old	Mid Slope, NW	ALGAE(70%); OPEN WATER (30%)	1.00 1.0	Tank Depth of	Not Det.	PABHh	>0.001
		well	Aspect			12"			
	3bb	Polygon	Upper Slope, NW	CANE(50%);JUBA(25%);LYAM(10%);	1.60, 1.1	Surf. Saturated	Not Det.	PEMC	0.19
			Aspect	ASIN(5%);CIAR(5%)					
	3cc*	Polygon	Upper-Mid Slope,	JUBA(45%);TYLA(25%);CANE(15%);	1.29, 1.1	Some Flowing	Not Det.	PEMB	0.53
			NW Aspect	ASIN(5%);BAOR(5%);JUTO(1%);		Water near Stock			
				LYAM(5%)		tank			
	3d	Point	Upper Slope,	JUBA(70%);BAOR(5%);CANE(5%);	2.25, 1.7	Surface Dry	Not Det.	PEMA	0.01
			NW Aspect	CIAR(20%)					
	3ee	Polygon	Upper Slope,	JUBA(40%);CIAR(15%);SPPE(5%);	3.22, 2.3	Surface Dry	Not Det.	PEMA	0.44
			NW Aspect	SYOC(5%);AGSM(5%);BAOR(5%);					
				HYPE(5%);AGCA(2%);AMPS(2%)					

Trib F	3 f f *	Polygon	Upper Slope,	JUBA(45%);TYLA(30%);CANE(10%);	1.57, 1.1	Surface Flow	Not Det.	PEMB	0.03
Sept.22			NW Aspect	ASIN(5%);BAOR(5%);GEAL(2%);					
				VEHA(2%)					
	3gg	Polygon	Upper Slope,	JUBA(70%);CANE(10%);BAOR(10%);	1.67, 1.2	Sat. in upper 10"	Not Det.	PEMC	0.09
			NW Aspect	MEAR(5%);LYAM(5%);GEAL(5%)					
	3h	Polygon	Mid Slope, NW	JUBA(80%);GEAL(5%);CANE(5%);	2.00, 1.2	JUBA Very Tall,	Not Det.	PEMC	0.07
			Aspect	BAOR(5%)		Cowlick Area			
	3 i i	Polygon	Upper Slope, NW	JUBA(50%);CIAR(20%);AGSM(10%);	3.00, 2.2	Surface Dry	Not Det.	PEMA	0.59
			Aspect	SPPE(5%);HYPE(5%);CANE(5%);					
				SYOC(5%);AGCA(2%)					
	3 j j	Polygon	Upper Slope, NW	JUBA(45%);SPPE(25%);CANE(10%);	1.71, 1.4	Sat. in Upper 10"	Not Det.	PEMC	0.07
			Slope	LYAM(5%);BAOR(5%);GEAL(5%);					
				ASIN(5%)					
	3kk	Polygon	Upper Slope, NW	CANE(65%);BAOR(10%);JUTO(5%);	2.13, 1.4	Sat. in Upper 10"	Not Det.	PEMC	0.05
			Slope	LYAM(5%);GEAL(5%);AGST(5%)					
				EPCI(5%);CIAR(2%)					
Sept.	3l,3m	Points	Mid Slope, NW	JUBA(50%);CAR1(10%);CIAR(10%);	3.33, 2.32	Surface Dry	Not Det.	PEMA	0.06
23			Aspect	POPR(5%);SYOC(15%);AGSM(5%)					0.02
	3n	Polygon	Mid Slope, NW	JUBA(60%);CANE(10%);HYPE(10%);	3.00, 1.90	Surface Dry	Not Det.	PEMA	0.13
			Aspect	CIAR(10%);AGSM(5%);POCO(5%)					
Trib. F	4a, ds	Polygon	Channel	TYLA(90%);OPEN WATER(90%)	1.00, 1.90	Flowing Water	Not Det.	PEMB	0.03
Chann.	road								
ds. to	4b	Polygon	Channel	SAEX(80%);CANE(10%);OPEN	1.00, 1.00	Surface Sat.	Not Det.	PSSC	0.02
Main-				WATER (10%)					
stem	4c	Polygon	Channel	CANE(40%);JUBA(30%);TYLA(10%);	1.50, 1.22	Surface Sat.	Not Det.	PEMC	0.03
Nov. 2				BAOR(10%)					
	4d	Linear	Channel	TYLA(80%)JUBA(10%);OPEN	1.00, 1.00	Ponded Water	Not Det.	PEMB	0.008
				WATER(10%)					
	4e,ds	Polygon	Channel, nikpoint	JUBA(70%);CANE(20%);OPEN	1.00, 1.00	Surface Sat.	Not Det.	PEMC	0.06
	fence			WATER(10%)					
	4f	Polygon	Channel Bank	JUBA(80%);CANE(10%);CIAR(10%)	2.00, 1.30	Surface Dry	Not Det.	PEMA	0.05
	4g	Linear	Pool in Channel	SCVA(60%);LEMI(20%); OPEN	1.00, 1.00	Pool, 6" depth	Not Det.	PEMF	0.003
				WATER(20%)					
	4h	Polygon	Channel	CANE(90%);ASIN(10%)	1.00, 1.00	Flowing Water	Not Det.	PEMB	0.01

Trib. F									
Chann.	4i	Linear	Channel	OPEN WATER	1.00, 1.00	Flowing Water-	Not Det.	R4SBG	0.003
ds						0.5-1.0 cfs			
to	4j	Polygon	Channel	BAOR(50%);CANE(20%);ASIN(10%);	1.50, 2.00	Flowing Water	Not Det.	PEMB	0.06
Main-				JUBA(20%)					
Stem	4k	Polygon	Channel	SCVA(80%);EPCI(20%)	1.00, 1.00	Flowing Water	Not Det.	PEMB	0.02
Nov. 2	4l	Linear	Channel	OPEN WATER	1.00, 1.00	Flowing Water-	Not Det.	R4SBG	0.006
						0.5-1cfs			
	4m	Polygon	Channel	CANE(60%);BAOR(20%);SCPA(20%)	1.67, 1.40	Flowing Water	Not Det.	PEMB	0.03
	4n	Linear	Channel	OPEN WATER	1.00, 1.00	Flowing Water-	Not Det.	R4SBG	0.01
						0.5-1.0 cfs			
	4o	Polygon	Channel	TYLA(70%);CANE(20%);EPCI(10%)	1.00, 1.00	Ponded Water	Not Det.	PEMB	0.02
						6"-12" Depth			
	4p	Polygon	Channel	JUBA(80%);CANE(10%);SCPA(10%)	1.00, 1.00	Flowing Water	Not Det.	PEMB	0.01
	4q	Polygon	Channel	TYLA(100%)	1.00, 1.00	Ponded Water	Not Det.	PEMB	0.03
						6"-12" Depth			
	4r	Polygon	Channel	CANE(50%);JUBA(30%);BAOR(20%)	1.67, 1.40	Flowing Water	Not Det.	PEMB	0.05
	4s	Polygon	Channel	AMFR(20%);BAOR(10%);CANE(5%);	1.67, 1.4	Flowing Water	Not Det.	PSSC	0.04
				SAEX(15%);PODE(10%);UNCONS.					
				BOTTOM(40%)					
RCM									
Sept	1a	Polygon	NW Aspect	CANE(30%);JUBA(20%);CAEM(5%);	2.25, 1.70	Surf. Dry, but	Not Det.	PEMC	0.05
23,			Upper Slope	LYAM(5%);BAOR(5%);CIAR(10%);		Hummocky			
Main-				HYPE(5%);SCLA(1%)					
Stem									
Slope	1cc	Polygon	NW Aspect,	JUBA(30%);CIAR(30%);CANE(5%);	3.25, 2.79	Surface Dry	Not Det.	PEMA	0.03
Wetl.			Upper Slope	GLLE(10%);MOFI(5%);AGSM(2%);					
				SYOC(3%);HYPE(2%)					
	1dd	Polygon	NW Aspect,	JUBA(50%);CANE(20%);SYOC(5%);	2.67, 1.70	Surf. Moist &	Not Det.	PEMC	0.14
			Upper Slope	HYPE(5%);GEAL(1%);CIAR(10%);		Hummocky			
				CAEM(2%);EPCI(2%);GLLE(2%);					

RCM	1ee	Polygon	NW Aspect,	JUBA(40%);CIAR(30%);SYOC(10%)	3.00, 2.50	Surf. Dry, adjacent	Not Det.	PEMA	0.02
Main-			Upper Slope			to 1d			
stem	1 f f	Polygon	NW Aspect, Mid	JUBA(60%);BAOR(10%);JUIN(1%);	2.78, 1.67	Surf. Moist, Drain-	Not Det.	PEMC	0.31
Slope			Slope	CANE/CAEM(1%);HYPE(5%);CIAR(5%)		age Channels			
Wetl.				LYAM(5%);SYOC(2%);GLLE(1%)					
Sept.	1gg	Polygon	NW Aspect, Mid	JUBA(50%);CIAR(20%);HYPE(10);	3.50, 2.39	Surface Dry	Not Det.	PEMA	0.1
23			Slope	SYOC(5%);AGSM(5%);ASER(3%);					
				AGST(1%);SOMO(1%)					
	1 hi	Polygon	Slope Feeder	JUBA(50%);CANE(30%);BAOR(5%);	2.33, 1.4	Surface Moist	Not Det.	PEMC	0.11
			Channel	LYAM (2%);HYPE(5%);CIAR(5%)					
	1kk	Polygon	NW Aspect,	JUBA(40%);CAPR(15%);CIAR(15%);	3.00, 2.58	Surface Dry	Not Det.	PEMA	0.03
			Lower Slope	ASER(10%);POPR(10%);ROAR(5%)					
	1l	Polygon	NW Aspect, Mid	JUBA(60%);CIAR(30%);AGSM(5%)	3.00, 2.10	Surface Dry	Not Det.	PEMA	0.01
			Slope						
	1 mm	Polygon	NW Aspect, Mid	JUBA(50%);CIAR(15%);AGST(5%);	3.00, 2.32	Surface Dry	Not Det.	PEMA	0.03
			Slope	CAPR(5%);AGSM(15%);SOMO(5%)					
	1nn	Polygon	NW Aspect, Mid	JUBA(80%);CANE(1%);AGST(5%);	2.25, 1.36	Surface Moist &	Not Det.	PEMC	0.06
			Slope	CIAR(5%);ROAR(3%)		Hummocky			
	1o	Polygon	NW Aspect,	JUBA(40%);CIAR(30%);HYPE(20%)	3.00, 2.67	Surface Dry	Not Det.	PEMA	0.01
			Upper Slope						
	1pp	Polygon	NW Aspect,	JUBA(40%);CAPR(15%);CANE(2%);	2.75, 2.55	Surface Dry	Not Det.	PEMA	0.06
			Upper Slope	MEAR(1%);CIAR(20%);SYOC(10%);					
				AGSM(5%);ROAR(1%);ASER(5%)					
	1q	Polygon	NW Aspect,	JUBA(40%);CANE(5%);CIAR(20%);	2.50, 2.07	Surface Dry	Not Det.	PEMA	0.02
			Upper Slope	POPR(5%)					
	1r	Polygon	NW Aspect,	JUBA(60%);AGST(15%);CIAR(15%);	3.00, 1.95	Surf. Dry & Slight	Not Det.	PEMA	0.01
			Upper Slope	POPR(5%)		Hummocky			
	2aa	Polygon	N. Aspect, Upper	JUBA(60%);CANE(15%);JUTO(3%);	1.50, 1.32	Surf. Hummocky	Not Det.	PEMC	0.1
			Slope, E. Drain.	CAEM(5%);SCPA(1%);CIAR(10%)					

RCM									
Main-	2b	Polygon	North Aspect,	JUBA(60%);CANE(5%);AGST(5%);	2.83, 1.65	Surface Dry	Not Det.	PEMA	0.03
stem			Upper Slope, E.	CIAR(5%);POPR(5%);HYPE(5%)					
Slope			Drainange						
Wetl.	2cc	Polygon	North Aspect,	JUBA(60%);AGST(5%);CANE(2%);	2.60, 1.80	Surface Dry	Not Det.	PEMA	0.21
Sept.			Upper Slope, E.	CIAR(15%);BRIN(5%)					
23			Drainage						
	2dd	Polygon	N. Aspect, Upper	JUBA(60%);CANE(20%);LYAM(10%);	1.86, 1.38	Surface Dry	Not Det.	PEMC	0.28
			Slope	OLIG.FORBS(10%);SPPE(5%);AGST					
				(5%);CIAR(10%)					
	2ee	Polygon	N. Aspect, Upper	JUBA(30%);CANE(30%);CAEM(10%);	1.43, 1.11	Surf. Saturated,	Not Det.	PEMB	0.14
			to Mid slope	LYAM(10%);GEAL(5%);SCPA(2%)		Hummocky &			
			2d	JUTO(2%)		Channeled			
	2 f i	Polygon	N. Aspect, Mid	JUBA(60%);SPPE(10%);CIAR(20%);	3.00, 2.0	Surf. Channeled	Not. Det.	PEMC	0.31
			Slope	HYPE (5%); GLLE(5%)		but Dry			
	2g	Polygon	N. Aspect, Lower	TYLA(60%);TYAN(10%);SCVA(10%);	1.00, 1.00	Surf. Sat.; Water	Not. Det.	PEMF	0.03
			Slope Depression	ALSU(5%);UNCONS.BOTTOM(15%)		Marks			
	2h	Point	Depression	UNCONS.BOTTOM(100%)	1.00, 1.00	Crayfish Burrows	Not. Det.	PUBF	0.01
Sept.	2j	Polygon	N. Aspect, Upper	JUBA(90%);LYAM(5%);CANE(1%);	1.75, 1.06	Surf. Sat, & Very	Dk.Brn.Surf.,	PEMB	0.02
24			Slope	CIAR(2%)		Hummocky	Sdy-gvl.loam		
	2k	Polygon	N. Aspect, Upper	JUBA(70%);CIAR(5%);AGSM(5%);	3.00, 1.67	Surf. Dry, Sat	DkBrn.Surf.,	PEMA	0.04
			Slope, around 2j	AGST(5%);ROAR(2%);HYPE(2%)		at 10 "	to Hard Layer		
				GLLE(1%);LYAM(2%);ASSP(5%)					
	2l	Polygon	N. Aspect, Upper	JUBA(70%);GEAL(5%);CIAR(5%);	2.20, 1.27	Surf. Dry to 10"	Mottling &	PEMC	0.03
			Slope, Depression	CAEM(10%);LYAM(2%)			Gley at 4-8"		
	2m	Polygon	N.Aspect, Upper	JUBA(25%);GEAL(25%);CIAR(20%);	3.50, 2.78	Surface Dry	Not Det.	PEMA	0.01
			Slope	HYPE(5%);GLLE(5%);AGSM(2%)					
	2n	Polygon	N.Aspect, Upper	JUBA(30%);CIAR(40%);GEAL(10%)	3.00, 2.80	Surf. Dry, Sat. at	Mottling &	PEMA	0.03
			Slope	ASSP(5%);GLLE(5%);SYOC(5%);		10"	Gley at 8"		
				LYAM/EPCI(5%)					

RCM	2o	Polygon	N. Aspect, Upper	JUBA(60%);CIAR(20%);LYAM(5%);	2.00, 1.72	Surf. Dry to 6"	Hard Layer	PEMA	0.02
Main-			Slope	SPPE(5%)			at 6"		
stem									
Slope	2p	Polygon	N. Aspect, Mid	JUBA(70%);CANE(10%);LYCI(10%);	1.57, 1.06	Surf. Sat.,&	Gleyed at 4"	PEMB	0.03
Wetl.			Slope	CAEM(5%);EPCI(2%);CIAR(2%)		Tussocky			
Sept.				LYAM(3%)					
24	2q	Polygon	N. Aspect, Mid	JUBA(60%);CIAR(20%);CANE(2%);	2.40, 1.87	Surface Dry	Not. Det.	PEMA	0.03
			Slope, Rings Part	LYCI(5%);SYOC(5%)					
			of 2p						
	2 rs	Polygon	N. Aspect, Rill	JUBA(60%);CANE(10%);CIAR(10%);	1.50, 1.30	Rill/Channel	Not Det.	PEMC	0.09
			On Lower Slope	LYAM(5%);EPCI(5%);CAEM(10%)					
	2t	Polygon	N. Aspect, lower	JUBA(60%);CANE(10%);CAEM(10%)	1.60, 1.37	Sat. at 2-12"	Gley at 3",	PEMC	0.07
			Slope	EPCI(5%);CIAR(10%)			Mottled		
	2u	Polygon	N.Aspect, lower	JUBA(40%);CANE(10%);CAEM(20%);	1.50, 1.26	Sat. in upper 10"	Not Det.	PEMC	0.04
			Slope	LYAM(10%);EPCI(10%);CIAR(5%)		Drain. Pattern			
	2v	Polygon	Lower Slope,near	TYLA(100%)	1.00, 1.00	Sat. in upper 10"	DkBrn-Blk	PEMB	0.02
			Hwy 128			Drain. Pattern	Surf.NoGley		
	2w	Polygon	NW Aspect, Mid	ELMA(90%);XAST(10%)	1.00, 1.00	Ponds water to	DkBrn-Blk	PEMC	0.02
			Slope			2.5';water marks	Surf. NoGley		
	2x	Polygon	NW Aspect, Mid	JUBA(35%);CAEM(10%);CANE(5%);	2.33, 2.28	Surf. dry to 8"	Surf. Dk Brn,	PEMA	0.03
			Slope	AGST(5%);CIAR(30%);POPR(5%)			No Gley or		
							Mottles		
	10a	Polygon	NW Aspect,	JUBA; POPR;AGSM; but no	No Data	No Data	Not Det.	PEMA	1.1
			Lower slope	Quantitative Data					
	10 b	Polygon	NW Aspect,	See 10 a	No Data	No Data	Not. Det.	PEMA	0.42
			Lower Slope						
RCM	5 t	Polygon	Lower Mainstem	SAEX(50%);PODE(20%);AMFR(20%);	1.50, 1.4	Flowing water	no data	PSSC	0.13
Confl. of			Channel	COBBLE/GVL(10%)					
ABCD-	5 u	Polygon	Lower Mainstem	COBBLE/GVL (80%);AMFR(15%);	1.67, 1.1	Flowing water	no data	R4SBJ	2.46
Hwy 128			Channel	PODE(5%)					
Chan-	5v	Polygon	Lower Mainstem	AMFR(20%);PODE(15%);COBBLE/	1.67, 1.3	Flowing water	no data	PSSC	0.35
nel			Channel	GVL(65%)					
	5w	Polygon	Lower Mainstem	COBBLE/GVL (75%);PODE (20%);	1.67, 1.4	Flowing water	no data	R4SBJ	0.11
			Channel	AMFR(5%)					

APPENDIX C

WETLAND INVENTORY

WOMAN CREEK WETLANDS

EXCLUDING SMART DITCH DRAINAGE

WOMAN CREEK WETLANDS, EXCLUDING SMART DITCH DRAINAGE 1/									
Drain. Basin	Wetl. No.	Feature	Geomorphology	Vegetative Composition & Cover(%)	Hydroph. Status	Hydrologic Indicator	Soils Indicator	Wetl. Type	Acres
M1									
Sept. 24	1a*	Polygon	Mid Slope, N.	JUBA(60%);ELMA(10%);CANE(5%);	1.67, 1.1	Surf seep from	Not Det.	PEMB	0.27
	mon. well		Aspect	JUTO(10%);EPCI(5%);GEAL/MEAR/		upslope			
	at seep 1a			LYAM(5%);CIAR(2%);AGSM(2%)					
				OPEN WATER(2%)					
	1b	Polygon	Lower Slope, N.	OPEN WATER (70%);JUBA(10%)	1.00, 1.0	Outlet from seep	Not Det.	PEMB	0.008
			Aspect	OBLIG. FORBS(10%);JUTO(5%);		1a			
				CANE(5%)					
	1dd	Polygon	Chann./Overbank	AMFR(40%);SAEX(10%);SPPE(15%);	1.50, 1.3	Surf. flow from	Not Det.	PSSC	1.66
				TYLA(3%);PODE(1%);CAEM(5%);		upstream			
				CANE(15%);POAN(1%);COBBLE(5%)					
	1e	Polygon	Mid Slope, N.	JUBA(50%);CIAR(30%);CAEM(5%);	2.50, 2.1	Surface dry	Not Det.	PEMA	0.01
			Aspect	CANE(2%);GEAL(5%);POPR(1%);					
				AGST(1%);ANGE(1%)					
	1f	Polygon	Mid Slope, N.	AGST(70%);ANGE(10%);RUME(5%);	2.33, 3.0	Surface dry	Not Det.	PEMA	0.03
			Aspect	CAIN(2%);GEAL(1%);EPCI(1%)					
	1gg*	Polygon	Mid Slope, N.	JUBA(40%);CANE(35%);EPCI(5%);	2.44, 1.36	Surf. Sat. in upper	Not Det.	PEMB	0.25
	10 ASI,		Aspect	GEAL(5%);CIAR(5%);PODE(2%);		10", partly hum-			
	mon. well			MEAR)2%);SYOC(1%);NECA(1%)		mocky			
	1hh	Polygon	Mid Slope, N.	JUBA(40%);GEAL(5%);CANE(5%);	2.86, 2.43	Surface dry	Not Det.	PEMC	0.16
	around1g		Aspect	CIAR(20%);SYOC(5%);HYPE(10%);					
				RUME(1%)					
	1i	Polygon	Mid Slope, N.	No data	No data	Surface dry	Not Det.	PEMA	0.12
			Aspect						
	1j	Polygon	Mid Slope, N.	JUBA(75%);CIAR(10%);SYOC(10%);	3.5, 1.75	Surface dry	Not Det.	PEMA	0.007
			Aspect	POPR(2%);AGSM(2%);NECA(1%)					
	1k	Polygon	Mid Slope, N.	JUBA(90%);CIAR(10%)	2.5, 1.44	Surface dry	Not Det.	PEMA	0.003
			Aspect						
	1l	Point	Channel	BOULDER/COBBLE(70%);ELMA(20%);	1.33, 1.20	Surf. sat. in upper	Not Det.	PEMC	0.002
			Aspect	AGST(10%)		10"			

1/ For natural "slope" wetlands, special hydrology (surface seepage) is indicated by an asterisk (*) inserted in the wetland number column. Special wetland types created or modified by impoundment (h), excavation (x), ditching (d) or artificial substrate (r) are shown in the wetland type column.

WOC

WOC

M1	1m	Polygon	Right Overbank	AMFR(60%);CIAR(10%);GEAL(10%)	2.67, 1.63	Surface dry	Not Det.	PSSA	0.003
	1n	Polygon	Overflow Channel	AMFR(40%);ELMA(5%)AGST(5%);	2.67, 2.13	Surface dry	Not Det.	PSSA	0.016
				POCA(10%);POPR(10%);PAVI(10%)					
	1o	Polygon	Lower Slope,	JUBA(50%);AGST(10%);XAST(2%);	2.86, 2.0	Surface dry	Not Det.	PEMA	0.01
			N. Aspect	POMO(2%);CIAR(10%);SYOC(10%);					
			Depression	POPR(2%)					
	1pp	Polygon	Lower Slope, N.	JUBA(60%);GEAP(10%);CIAR(3%);	2.70, 1.91	Surface dry	Not Det.	PEMA	0.06
			Aspect	SPPE(2%);ASSP(1%);NECA(1%);					
				AGSM(5%);AGST(2%);SYOC(15%);					
				AMFR(2%)					
WOCE									
Sept. 24	1a	Polygon	Mid Slope, N.	JUBA(40%);CANE(20%);LYAM(10%);	2.29, 1.43	Sat. in upper 10"	Not Det.	PEMB	0.05
			Aspect	GEAP(5%);BAOR(15%);AGST(1%);					
				CIAR(5%)					
	1b	Polygon	Mid Slope, N.	JUBA(30%);CANE(20%);GEAP(10%);	2.63, 2.09	Moist soil to 12",	Dark gray surf.	PEMC	0.11
			Aspect	CIAR(20%);LYAM(5%);BAOR(5%);		then bedrock	mottles & gley		
				ASSP(2%);SYOC(2%)			absent		
	1c	Point	Mid Slope, N.	CAPR(40%);BAOR(20%);GEAP(5%);	2.25, 2.36	Surface dry	Dark gray surf;	PEMA	0.002
			Aspect	LYAM(1%)			gvl at 4"		
	1d	Polygon	Mid Slope, N.	CANE(30%);JUBA(20%);VEHA(20%);	1.67, 1.36	Soil Sat. at 12"	Not Det.	PEMC	0.021
			Aspect	CIAR(20%);LYAM(10%);EPCI(1%);					
				CAEM(2%);ELAC(2%);BAOR(5%)					
	1e	Polygon	Mid Slope, N.	JUBA dominant, CANE, VEHA &	No Cover	Surface dry	Not Det.	PEMA	0.005
			Aspect	LYAM absent	Data				
	1f	Polygon	Mid Slope, N.	JUBA(60%);CIAR(25%);SYOC(5%);	2.88, 2.06	Soil Sat. at 12"	Not Det.	PEMA	0.06
			Aspect	POPR(2%);HYPE(2%);CANE(2%);					
				LYAM(2%);ROAR(1%)					
	1g*	Polygon	Mid Slope, N.	JUBA(60%);CANE(10%);BAOR(20%);	1.57, 1.45	Surf. hummocky;	Not Det.	PEMB	0.06
			Aspect	EPCI(2%);GEAP(5%);LYAM/MEAR(5%);		soil sat. at 12"			
				VEHA(5%);					
	1h	Line cir-	Mid Slope, N.	JUBA(50%);CIAR(10%);HYPE(10%);	2.57, 2.03	Surf. dry	Not Det.	PEMA	0.17
		cles 1g	Aspect	BAOR(10%);VEHA(2%);GEAP(5%);					
				CANE(2%)					

WOCE	1i	Polygon	Mid Slope, N.	JUBA(70%);CANE(10%);GEAP(20%);	2.33, 1.86	Soil sat. at 5"	Mottling at 6";	PEMC	0.03
			Aspect	CIAR(20%);EPCI(2%);SYOC(2%)			gvl below		
	1j	Polygon	Mid Slope, N.	CIAR(40%);JUBA(30%);GEAL(10%);	3.00, 2.8	Surf. dry	Not Det.	PEMA	0.11
			Aspect	POPR(10%);CANE(5%);SYOC(2%)					
				OEN1(2%)					
	1k	Polygon	Mid Slope, N.	JUBA(40%);GEAL(10%);SYOC(5%);	2.42, 1.65	Surf. dry	Not Det.	PEMC	0.03
			Aspect	CANE(5%);CIAR(10%);LYAM(3%);					
				SOL2(2%)					
	1 l*	Polygon	Mid Slope, N.	JUBA(60%);CANE(15%);CAEM(5%);	1.60, 1.15	Surf. hummocky;	Not. Det.	PEMB	0.22
			Aspect	ELAC(2%);VEHA(2%);EPCI(2%);		iron-stained surf.			
				LYAM(2%);GEAL(5%);LEMI(2%);		water			
				CIAR(2%)					
	1m	Polygon	Lower Slope, N.	JUBA(50%);CIAR(20%);GEAL(10%);	3.00, 2.12	Surf. dry; moist	No mottles or	PEMA	0.04
			Aspect	SYOC(5%)		at 12"	gleying		
	1n	Polygon	Lower Slope, N	JUBA(50%);CIAR(30%);SYOC(5%);	3.00, 2.27	Surf. dry		PEMA	0.03
			Aspect	CAPR(5%)					
	1o,	Polygon	Left Overbank	JUBA(40%);CIAR(40%);GEAL(5%);	3.17, 2.70	Surf. moist to 6",	No mottles or	PEMA	0.04
	near	well no. 52393		NECA(5%);SYOC(5%);CAPR(5%)		then gvl.	gleying to 6"		
Sept. 25	1pp	Polygon	Chann./Overbank	TYLA(60%);JUBA(10%);CANE(20%);	1.00, 1.00	Standing water 2"	Not Det.	PEMB	0.18
				OGLIG.FORBS(10%)		deep in channel			
	1qr	Polygon	Chann./Overbank	JUBA (40%);CANE(30%;LYAM (5%)	1.13, 1.05	Surface flow	Not Det.	PEMB	0.31
				TYLA(5%);SCPA(5%);OBLIG. FORBS					
				(10%); SPPE(5%)					
	1r	Polygon	Chann./Overbank	See 1s	See 1s	See 1s	See 1s	PEMC	0.29
	1s	Polygon	Chann./banks	JUBA(40%);CAPR(40%);CANE(5%);	1.89; 1.92	Surface dry	Not Det.	PEMC	0.11
				CAEM(5%);AGST(2%);GEAL(2%);					
				LYAM(2%)					
	1 t t	Polygon,	North Aspect,	JUBA(30%);CIAR(40%);CANE(2%);	2.88, 2.85	Surface dry	Not Det.	PEMA	0.1
		atASI,	Lower Slope	MEAR(1%);GEAL(3%);SYOC(5%);					
		seep 8		POPR(5%);HYPE(2%)					
	1uu	Polygon,	Left Overbank	JUBA(50%);SPPE(15%);CIAR(30%);	2.00, 2.08	Surface dry	Not Det.	PEMA	0.02
		at ASI Seep 7		CANE(2%);CAEM(1%);CAPR(1%)					

WOCE									
	1 v v	Polygon	Right Overbank	JUBA(50%);CIAR(25%);SYOC(10%);	3.00, 2.35	Surface dry	Not Det.	PEMA	0.06
				CANE(2%);SPPE(3%);AMPS(1%);					
				PRAR(1%);NECA(2%);LAT1(5%)					
	1w	Polygon	Channel plus	TYLA(70%);PODE(20%);LYAM(5%);	1.50, 1.40	Dam influence in	Not Det.	PEMBh	0.01
			Lower Bank	CANE(5%)		channel			
	1 x x	Polygon	Channel Over-	JUBA(70%);CIAR(10%);LATI(2%);	3.00, 2.33	Surface dry	Not Det.	PEMA	0.29
			banks	CAPR(5%)					
	1y,	Polygon	North Aspect,	JUBA(30%);CIAR(30%);GEAL(5%);	3.00, 2.76	Surface dry	Not Det.	PEMA	0.09
	well 62093		Lower Slope	ASSP(5%);OEN1(2);CAPR(20%);					
				AGSM(2%);CANE(1%);GABO(1%)					
WOCF									
Sept. 25	1a	Polygon	NE Aspect, Up-	SPPE(60%);CAPR(3%);JUBA(20%);	2.89, 1.89	Surface dry	Not Det.	PEMC	0.16
			per Slope, Drain-	CANE(10%);CIAR(5%);SYOC(1%);					
			ageway	GLLE/HYPE(1%);PAVA(2%)					
	1b	Polygon	NE Aspect, Mid-	JUBA(30%);AGST(30%);CAPR(20%)	2.33, 2.25	Surface dry	Not Det.	PEMA	0.06
			Slope Drainage						
	1c	Polygon	Upper Slope,	JUBA(50%);CIAR(20%);CANE(2%);	3.00, 2.36	Surface dry	Not Det.	PEMA	1.11
			Heads in Drain-	GEAL(10%);AGSM(10%);VEHA(2%);					
			ageway	SYOC(5%);ASSP(2%);AGST(2%)					
				HYPE(2%)					
	1d	Polygon,	N. Aspect, Upper	JUBA(70%);CANE(10%);GEAL(5%);	1.83, 1.26	Surf. hummocky;	dk brn. surf.	PEMC	0.09
			Slope	CAEM(5%);EPCI(1%);CIAR(5%)		moist, not sat.	soil		
	1e	Polygon	N. Aspect, Upper	JUBA(50%);CANE(10%); CAEM(1%);	2.00, 1.66	Surf. hummocky	Not Det.	PEMC	0.24
			Slope	SPPE(10%);GEAL(10%);CIAR(10%)					
	1f*	Polygon	N. Aspect, Upper	JUBA(60%);TYLA(10%);CANE(10%);	1.27, 1.14	Surf. hummocky;	Not Det.	PEMB	5.14
	SW 80 site		to Lower Slope	LYCI(10%);SPPE(5%);GEAL(5%);		Surf. water &			
			to Creek Bank	CAEM(2%);ASIN(1%);LYAM(1%);		channels			
				MEAR(1%);EPCI(1%)					
	1 f f	Linear	N. Asp, Upper Sl.	See 1a	See 1a	Narrow drainage	Not Det.	PEMC	0.03
Sept. 26	1g	Polygon	N. Aspect, Mid	JUBA(30%);SPPE(50%);AGST(5%);	2.71, 1.96	Surf. Sat at 3-4"	Gley at 6"	PEMC	0.24
			Slope	CIAR(5%);SORI(4%);ASSP(2%);		Gvl below 6"	Surf. dk. brn.		
				CANE(1%)					

WOCF	1h,1i	Polygons	N. Aspect, Mid	JUBA(30%);SPPE(40%);GABO(10%);	2.90, 2.18	Surf. Sat. at 3-4"	Gley at 6"	PEMC	0.18
			Slope	AGST(5%);CIAR((5%);POPR(5%);		Gvl below 6"	Surf. dk. brn.		
				ASSP(1%);GEAL(3%);AGSM(5%);					
				CANE(1%)					
	1 j, 1k	Polygons	N. Aspect, Mid	JUBA(40%);SPPE(40%);VEHA(1%);	1.78, 1.61	Saturated at 8"	No gley to 8"	PEMC	0.86
			Slope, has 1 I	CANE(5%);ELE1(10%);IRMI(2%);		Drain. pattern &			
			inclusion	CIAR(5%);CAEM(1%);GEAL(5%)		hummocks			
	1mm	Linear	N. Aspect, Small	No veg. data taken	No data	Saturated at 10"	Not Det.	PEMC	0.04
			Drainage						
WOCM2									
Sept. 26	1n	Polygon	Chann./Overbank	AMFR(40%);PODE(2%);POAN(1%);	1.50, 1.08	Channel dry	Not Det.	PSSA	0.43
				SAEX(5%);CANE(5%);COBBLE(5%)					
	1no,	Polygon	Chann./Overbank	See 1 n	1.50; 1.08	Channel dry	Not Det.	PSSA	0.38
	joins	1n upstream							
	1s	Polygon	Chann./Overbank	JUBA(50%);CANE(5%);GEAL(5%);	2.83, 2.21	Surface dry	Not Det.	PEMC	0.23
				SYOC(20%);CIAR(10%);AGSM(5%)					
	1r	Polygon	Chann./Overbank	PODE (50%);SCPA(5%);LYAM(5%);	1.50, 2.25	Ditch, some sat-	Not Det.	PEMC	0.08
				OPEN WATER (20%)		uration & water			
	1oq	Polygon	Chann./Overbank	See 1jj,WOCM2	See 1jj	Some saturation	Not Det.	PSSC	0.23
						& standing water			
WOCF									
Sept. 26	1p	Polygon	N. Aspect, Lower	JUBA(40%);SPPE(30%);AGST(10%);	1.60, 1.56	Hummocks;Sat.	Not Det.	PEMC	0.34
			Slope	CANE(5%);OBLIG.FORBS(5%)		in upper 10"			
	1 t*	Polygon	N. Aspect, Lower	See 1f	See 1f	Saturated	Not Det.	PEMB	0.35
			Slope						
	1u	Polygon	N. Aspect, Lower	JUBA(40%);CANE(10%);SPPE(10%);	2.14, 1.73	Surface dry	Not Det.	PEMC	0.5
			Slope	LYCI(5%);EPCI/LYAM(2%);CIAR(5%);					
				SYOC(10%)					
	1 w	Polygon	N. Aspect, Mid	JUBA(50%);CANE(2%);IRMI(1%);CIAR	2.57, 2.41	Surface dry	Dk. brn. surf.	PEMA	1.42
			Slope	(30%);AGSM(10%;AGST(5%);POPR(5%)			to 8",gvl subsoil		

WOCF	1 x	Polygon	N. Aspect, Mid	JUBA(45%);CANE(5%);SPPE(15%);	2.71, 2.30	Surface dry	Not Det.	PEMA	0.47
			Slope	CIAR(25%);AGSM(10%);AGST(5%);					
				POPR(4%)					
	1y	Polygon	N. Aspect, Lower	SPPE(80%);JUBA(5%);POPR(5%);	2.40, 2.15	Surf. dry; some-	Not Det.	PEMC	0.02
			Slope	SYOC(5%);LYAM(1%)		what hummocky			
	1 z*	Polygon	N. Aspect, Upper	CANE(75%);JUBA(10%);EPCI(10%);	1.20, 1.02	1-2" surface water	Not Det.	PEMB	0.07
			Slope	VEHA(2%)					
	2 a*	Polygon	N. Aspect, Upper	See 1z	See 1z	See 1z	Not Det.	PEMB	0.17
			Slope						
	2b	Polygon	N. Aspect, Upper	SPPE(60%);JUBA(15%);GEAL(5%);	3.14, 2.30	Surface dry	Not Det.	PEMC	0.32
			Slope	CIAR(5%);NECA(5%);POPR(5%);					
				SYOC(5%)					
WOCM2									
Sept. 26	2a,	Polygon	N. Aspect, Lower	JUBA(60%);CIAR(20%);SYOC(15%);	3.33, 2.18	Surface dry	Not Det.	PEMA	0.05
	near 61893 well		Slope	POPR(2%);CAPR(2%);ROAR(1%)					
	2b	Polygon	N. Aspect, Lower	JUBA(70%);CIAR(20%);POPR(2%)	3.00, 1.65	Surf. dry to 12"	Dk.brn. surf.,	PEMA	0.02
			Slope			sdy-gvl loam	no mottles/gley		
	2c	Polygon	N. Aspect, Lower	JUBA(50%);TYLA(20%);LYCI(2%);	2.43, 1.77	Surf sat. at 10"	Not Det.	PEMC	0.06
			Slope	MEAR(2%);CAPR(5%);CIAR(20%)		and hummocky			
				SYOC(1%)					
	2d	Polygon	N. Aspect, Lower	JUBA(40%);TYLA(15%);GABO(1%);	2.78, 1.96	Surf. sat at 6"	Soil gleyed at	PEMC	0.28
			Slope	AGST(5%);CANE(5%);CIAR(15%);		& hummocky	6"		
				ASSP(3%);POPR(2%);SYOC(5%)					
	2e	Point	N., Aspect, Lower	JUBA(70%);SPPE(10%);CIAR(15%);	3.00, 1.81	Surface dry	Not Det.	PEMA	0.005
			Slope	POPR(5%);AGSM(5%)					
	2f	Polygon	N. Aspect, Lower	JUBA(60%);CANE(5%);CAEM(5%);CAPR	2.44, 1.89	Surf. sat. at 10"	Gley & mottling	PEMC	0.17
			Slope	(5%);RUME(1%);CIAR(20%);POPR(2%);			at 8"		
				SYOC(5%);EPCI(1%)					
WOCD									
	1a*	Polygon,	S. Aspect, Upper	TYLA(50%);JUBA30%);SPPE(10%);	1.88, 1.09	Surf. water	Not Det.	PEMB	0.27
Antelope			Slope	CANE(10%);EPCI(1%);LEMI(1%);					
Springs				CIAR(2%);NECA(1%)					
Area									
Sept. 26	1 b	Polygon	S. Aspect, Mid	CIAR(60%);JUBA(20%);CAEM(10%);	3.00, 3.10	Surface dry	Not Det.	PEMA	0.08
			Slope	POPR(5%);NECA(3%);VER1(2%)					

WOCD									
Sept. 27	1c	Polygon	S. Aspect, Lower	JUBA(30%);SPPE(20%);CANE(4%);	2.67, 2.59	Surface dry	Not Det.	PEMA	0.08
			Slope	CIAR(40%);AGSM(5%);POPR(2%)					
	1d*	Polygon	Easterly Aspect,	JUBA(60%);TYLA(20%);CANE(5%);	1.67, 1.23	Surf. running	Not Det.	PEMB	6.14
	around big seep		Upper-Mid Slope	SPPE)5%);ASIN(1%);NAOF(1%);		water on 10% of			
	SW 13 well and SW104			LYCI/LYAM/MEAR(10%);NECA(1%);		site; saturated &			
				SYOC(1%);CIAR(5%);		hummocky			
	3s*	Polygon,	Easterly Aspect,	NAOF(90%);EPCI(1);LEMI(3%);	1.00, 1.00	Flowing spring;	Organic mat;	PABH	0.17
		within 1d	Mid Slope	SCVA(0.5%);CANE(2%);JUTO(1%);			muck		
				MEAR(2%);VEAM(0.5%)					
	1 f, in	Polygon	Easterly Aspect,	SPPE(50%);JUBA(20%);CIAR(10%);	2.17, 1.92	Adj. to flowing	Not Det.	PEMC	0.12
	1d		Mid Slope	IRMI(1%);OBLIG.FORBS(10%);		channel			
				HYPE(2%)					
Sept. 27	1h	Point,	SE Aspect,	CANE(80%);CIAR(15%);JUBA(5%)	2.00, 1.40	Adjacent to 1 b	Not Det.	PEMB	0.01
			Upper Slope			seep			
	1j	Polygon	Easterly Aspect,	TYLA(19%);ALGAL MAT(90%)	1.00, 1.00	Excavated pond	Not Det.	PABHx	0.02
			Mid Slope			2' deep			
	1l	Polygon	Scarp area	JUBA(10%);CIAR(15%);HYPE(30%);	3.11; 3.24	Surf. dry, anthill	dk gray soil to 2	PEMA	0.05
				SYOC(5%);SPPE(10%);VER1(2%);		nearby	gvl-cobbly		
				CAPR(5%);UPL. SHRUBS(3%);					
				VEHA(5%)					
	1m	Polygon	Easterly Aspect,	JUBA(40%);JUTO(10%);TYLA(*5%);	2.10, 1.78	Small swale upst.	Not Det.	PEMC	1.82
			Upper Gentle	ASIN(1%);VEHA(2%);GEAL(5%);		of large seep			
			Slope	CIAR(20%);PODE(2%);SONU(1%)					
				LYAL(10%);OBLIG.FORBS(5%)					
	1n, 1o	Polygons,	Upper, Gentle	JUBA(60%);RUME(2%);GEAL(5);	3.16, 1.97	Surf. dry to 2"	Dk gray gvl.	PEMA	0.009
		2 outliers	Slope	CIAR(15%);HYPE(5%);POPR/POCA(5%)			loam		
		with same	veg. comp.	OBLIG FORBS (1%)	2.86, 2.00	Surface dry	Not Det.	PEMA	0.02
	1p	Polygon	Gentle, Upland	JUBA(60%);CIAR(15%);RUME(5%);	3.17, 1.75	Surface dry	Not Det.	PEMA	0.06
	outlier to 1m		Swale	HYPE(2%);GEAL(5%);POPR(5%)					

WOCD									
Sept. 27	1 q	Polygon	Upper Border	JUBA(50%);JUTO(5%);LYAL(5%);	2.88, 2.24	Surface dry	Not Det.	PEMA	0.82
			Mosaic of PEMA	CIAR(10%);SONU(20%);AGSM(5%);					
				POCA/POPR(5%);HYPE(2)					
	1r	Polygon	Near Upper	JUBA(60%);JUTO(5%);ASSP(2%);	3.00, 2.07	Surface dry	Not Det.	PEMA	0.01
			Border of Seep	CIAR(15%);HYPE(2%);POPR(10%);					
				SYOC(8%)					
	1s	Polygon	Near Upper	JUBA(50%);CIAR(20%);ASSP(2%);	3.33, 2.10	Surface dry	Not Det.	PEMA	0.05
			Border of Seep	SYOC(2%);POPR/POPR(5%);HYPE(1%)					
	1t	Polygon	Near Upper	JUBA(50%);CIAR(40%);POPR/POCA	3.00, 2.43	Surface dry	Not Det.	PEMA	0.01
			Border of Seep	(5%);GEAL(2%)					
	1u	Polygon	Upper Border of	JUBA(50%);SPPE(10%);CANE(5%);	2.40, 2.11	Not Det.	Not Det.	PEMC	0.27
			Seep	CIAR(30%);HYPE(3%)					
	1v	Polygon	Lower Border of	JUBA(60%);CIAR(30%);POA1(10%)	3.00, 2.20	Not Det.	Not. Det.	PEMA	0.03
			Seep						
	1w	Polygon	Lower Border of	JUBA(80%);POA1(10%);SYOC(2%);	3.33, 1.57	Surf. saturated	Not Det.	PEMC	0.01
			Seep	ASER(1%);AGSM(5%);RUME(1%)					
	1x*	Polygon	Seep Drainage	CANE(40%);TYLA(50%);OBLIG.	1.00, 1.00	3" Flowing water	Not Det.	PEMB	0.08
			Channel	FORBS(10%)					
	1 y	Polygon	Seep Drainage	TYLA(35%);JUBA(35%);CANE(15%);	1.17, 1.21	Surf. saturated	Not Det.	PEMB	0.16
			Channel	ASIN(1%);ASPR(5%);CIAR(5%)					
	2a	Point	Easterly Aspect,	LYAL(40%);TYLA(20%);JUBA(30%);	1.00, 1.00	Surf. saturated	Surf. dk gray,	PEMB	0.01
			Mid Slope	CANE(10%)			silty clay, mot-		
							ling		
	2b	Polygon	Easterly Aspect,	JUBA(30%);SPPE(25%);LYAL(2%);	2.40, 2.46	Surf. damp	Surf. dk gray,	PEMA	0.15
			Mid slope	SYOC(3%);CIAR(35%)			silty clay, mot-		
							ling		
	2c	Polygon	Seep Drainage	CANE(30%);SCVA(2%);TYLA(15%);	2.11, 1.6	Surf. saturated;	Not Det.	PEMB	0.35
			Channel	JUBA(10%);VEHA(1%);SPPE(30%);		flowing water			
				RUME(1%);SYOC(5%);CIAR(5%)					
	2d	Polygon	E. Aspect, Lower	CANE(40%);JUBA(10%);SPPE(10%);	2.17, 2.19	Drainage pattern	Surf. dk gray,	PEMA	0.49
			Slope	SYOC(5%);CIAR(30%);TYLA(2%)			silty clay		

WOCD									
Sept. 27	2e	Polygon	Inclusion in 2d	TYLA(20%);JUBA(30%);CANE(10%);	2.00, 1.71	Drainage pattern	Surf. clayey;	PEMC	0.01
				VEHA(20%);GEAL(2%);CIAR(15%)			gley & mottling		
	2 f,	Polygon	E. Aspect, lower	JUBA(65%);SPPE(10%);CIAR(20%);	2.75, 1.81	Surface dry	Not Det.	PEMC	0.19
	at well no. 61693		Slope	SYOC(3%)					
	(Seep 2AST)								
	2g	Polygon	E. Aspect, Lower	JUBA(55%);SPPE(20%);CIAR(15%);	2.75, 1.84	Surface dry	Not Det.	PEMC	0.16
			Slope	SYOC(5%)					
	2h	Polygon	Seep Drainage	CANE(65%);TYLA(10%);JUBA(10%);	1.80, 1.27	Flowing water,	Not Det.	PEMB	0.37
			Channel	VEHA(5%);CIAR(5%)		3-6 " deep			
	2i	Polygon	Easterly Aspect,	SPPE(80%);CIAR(10%);SYOC(3%);	4.50, 2.33	Surf. dry to 6 ";	Not Det.	PEMA	0.02
			Mid Slope	AGSM(3%)		no hummocks			
	2j	Polygon	Easterly Aspect,	JUBA(60%;CANE(20%);CIAR(10%);	2.50, 1.47	Surf. dry to 6";	Not Det.	PEMA	0.03
			Mid slope	SYOC(5%)		no hummocks			
	2k	Polygon	Seep Drainage	TYLA(65%);SCPA(5%);CANE(15%);	1.00, 1.00	Flowing surface	Not Det.	PEMB	0.07
			Channel	SCVA(5%);EPCI(3%);JUBA(5%)		water			
	2l	Polygon	Seep Drainage	CANE(80%);JUBA(10%);CIAR(5%);	2.25, 1.17	Surf. flowing	Not Det.	PEMB	0.01
			Channel	ASSP(1%)		water, 3-6" deep			
	2m	Linear	Seep Drainage	CANE(30%);JUBA(20%);CAEM(10%);	2.00, 1.83	Surf. flowing water,	Not Det.	PEMB	0.05
			Channel	SCPA(2%);RUME(2%);CIAR(20%);		3-6" deep			
				ASSP(5%)					
	2n	Polygon	Chann./Overbank	SAEX(85%);CANE(10%);SYOC(5%)	2.00, 1.15	Surf. flowing water,	Not Det.	PSSC	0.05
						3-6" deep			
WOCM2									
Sept. 27	1a	Polygon	Channel/Banks	SAEX(50%);CAEM(10%);CANE(10%);	1.38, 1.16	Surface dry	Cobble	PSSC	0.13
				JUBA(5%);PODE(5%);AMFR(10%);					
				SPPE(5%);TYLA(2%)					
	1bb	Polygon	Chann./Overbank	PODE(50%);SAEX(10%);AMFR(5%);	2.25, 1.95	Surface dry	Cobble	PFOC	0.25
				POAL(30%)					
	1cc	Polygon	Chann./Overbank	AMFR(40%);SAEX(50%)	1.00, 1.00	Surface dry	Cobble	PSSC	0.3
	1d	Polygon	Chann./Overbank	AMFR(50%);SAEX(40%);TYLA(2%);	1.60, 1.06	Water in channel	Cobble	PSSC	0.22
				OPEN WATER(2%);SYOC(2%)		to 6" deep			

WOCM2									
Sept. 27	1e	Polygon	Chann./Overbank	SAEX(50%);AMFR(40%);PODE(5%);	2.00, 1.14	Water in channel	Cobble	PSSC	0.56
				SPPE(2%)					
	1f	Polygon	Chann./Overbank	SAEX(70%);JUBA(15%);AGSM(15%)	2.00, 1.45	Water in channel	Not Det.	PSSC	0.2
	1g	Polygon	Channel/Banks	SAEX(35%);AMFR(35%);JUBA(8%);	1.71, 1.26	Flowing water	Not Det.	PSSC	0.2
				SOGI(5%);SPPE(8%);PODE(3%);					
				TYLA(1%)					
	1hh	Polygon	Chann./Overbank	AMFR(20%);PODE(30%);SAEX(25%);	2.00, 2.16	Flowing water	Not Det.	PFOC	0.11
	well no. 61993?			JUBA(15%);AGSM(8%)					
	1i,	Polygon	Channel/Banks	SAEX(55%);AMFR(40%);COBBLE(5%)	1.00, 1.0	Stream bed;	Not. Det.	PSSC	0.05
						saturated			
	1jj	Polygon	Chann./Overbank	SAEX(80%);PODE(10%);AMFR(10%)	1.50, 1.19	Flowing water	Not Det.	PSSC	1.26
				SURF WATER(5%)					
	1k	Polygon	Lower Slope	TYLA (85%);JUBA(8%);SPPE(5%);	1.20, 1.05	Standing water	Not Det.	PEMB	0.02
				SURF.WATER(2%)					
	1l	Polygon	Right Overbank	TYLA(80%);SAEX(5%);BAOR(10%);	2.25, 1.35	Surface sat.	Not Det.	PEMB	0.06
				CIAR(5%)					
	1m	Polygon	Ditch along Nat.	TYLA;SAEX;PODE;SAAM;AMFR;	1.33, -----	Surface sat.	Not Det.	PEMB/	0.09
			Channel	COBBLE (no quantitative data)				PSSCx	
	1nn	Polygon	Right Overbank	JUBA(90%)	1.00, 1.00	Sat in upper 10"	Not Det.	PEMC	0.06
	1oo	Polygon	Right Overbank	JUBA(40%);GEAL(5%);SPPE(5%);	3.00, 2.65	Surface dry	Not Det.	PEMA	0.23
				CIAR(10%);SYOC(30%);AGSM(10%)					
WOCM3									
Sept. 28	1a,	Polygon	Chann./Overbank	SAEX(40%);AMFR(30%);POAL(5%);	1.44, 1.40	0.2-0.5 cfs flow ,	Not Det.	PSSC	0.49
	near SW 32 sta.			CANE(5%);SCPA(1%);NAOF(1%);		3-6" deep			
				TYLA(1%);PODE(15%);COBBLE(1%)					
	1b	Polygon	Pool in Channel;	OPEN WATER(100%)	1.00, 1.00	1-2' Depth, small	Not Det.	PUBHh	0.02
			weir backwater			fish			
	1c	Polygon	Right Overbank	AMFR(40%);SAEX(30%);AMPS(10%);	2.60, 1.80	Surface dry	Not Det.	PSSA	0.09
				NECA(10%);AGSM(30%)					
	1cc	Polygon	S. Aspect, Lower	JUBA(55%);CIAR(45%)	2.50, 2.35	Sat. in upper 10"	Dk gray & mot-	PEMC	0.02
			Slope				ling in up. 10"		

WOCM3	1dd*	Polygon	S. Aspect, Lower	TYLA(95%);SYOC(3%);CIAR(2%)	3.00, 1.15	Small seepage	Not Det.	PEMB	0.07
Sept. 28			Slope			flow			
	1ee*	Polygon:	S. Aspect, Lower	TYLA(65%);JUBA(10%);CANE(10%);	1.71, 1.11	Seep water	Not Det.	PEMB	0.12
	(well no. 54193		Slope	SCPA(5%);RUME(1%);CIAR(3%);		emerging			
	well no. 54093)			JUTO(2%)					
	1f	Polygon	Channel/Banks	AMFR(20%);PODE(40%);CANE(5%);	1.63, 1.98	Ch. 2' wide; flow	Not Det.	PSSC	0.2
				SAAM(1%);SAEX(15%);SCPA(5%);		0.25 cfs; Spirogyra			
				SCVA(5%);CIAR(5%)		on cobble			
	1gg	Polygon	Chann./Overbank	PODE(60%);AMFR(20%);SAEX(20%)	1.67, 2.20	Flow 3-6" deep;	Not Det.	PFOC	0.06
						riffle/pool habitat			
	1h	Polygon	Chann./Overbank;	PODE(30%);SAEX(20%);AMFR(20%);	1.86, 1.84	Surf. Flow;riffle/	Not Det.	PSSC	0.4
			Channel split	SOGI(5%);CANE(5%);TYLA(10%);		pools;N. Ch. flow;			
				RUME(5%)		S.Ch. dry			
	1 i i	Polygon	Backwater in	PODE(15%);AMFR(20%);TYLA(20%);	2.00, 1.45	Stream pooled	Not Det.	PSSCh	0.2
			Channel	SAEX(35%);SAAM(2%);SOGI(4%);		from C-1 dam			
				CIAR(2%)					
	1j	Polygon,	Backwater in	TYAN(40%);TYLA(50%);EPCI(3%);	1.75, 1.09	Stream deep &	Not Det.	PEMFh	0.06
			Channel	CIAR(3%)		pooled from C-1			
						dam			
	1kk √	Polygon	Backwater from	SAEX(30%); AMFR(40%);SAAM(5%);	2.33, 1.61	Surface sat.	Not Det.	PSSCh	0.14
			Dam C-1	SOGI(5%);NECA(2%);CIAR(15%)					
	1k	Polygon	Backwater from	SAEX(50%);AMFR(40%)	1.00, 1.00	Surface sat.	Not Det.	PSSCh	0.14
			Dam C-1						
	1 l l √	Polygon	N. side of C-1	AMFR(30%);SAEX(30%);TYLA(10%);	1.33, 1.20	Surface sat.	Not Det.	PSSCh	0.05
				ELAN(10%);JUBA(10%);SAAM(10%)					
	1m √	Polygon	S. Bank of C-1	AMFR(50%);TYLA(10%);SYOC(20%);	2.33, 2.00	Surface sat.	Not Det.	PSSCh	0.09
				CIAR (10%);SOGI(5%);CANE(5%)					
	1mm √	Polygon	S. Bank of C-1,	Drawdown veg.-no data	no data	Surface sat.	Not Det.	PEMCh	0.04
	1n	Polygon	C-1 Pool	OPEN WATER (100%)	1.00, 1.00	Depth Unknown	Not Det.	PUBHh	0.78
WOCM4									
Sept. 28	1aa,	Polygon	Scour Hole in Ch.	PODE(50%);SAEX(30%);AMFR(10%);	2.00, 2.15	Flowing Surf.	Not Det.	PFOC	0.44
	well	#54593	Below C-1 Dam	SAAM(5%);AGSM(5%)		Water			
	1b, ds	Linear √	Seep from C-dam	TYLA(100%)	1.00, 1.00	Surface sat.	Not Det.	PEMB	0.005
	C-1,Well# 63393								

WOCM4									
Sept. 28	1dd	Polygon	Right Overbank	JUBA(60%);CIAR(10%);SYOC(15%);	3.25, 2.00	Surface dry	Not Det.	PEMA	0.03
				AGSM(10%)					
	1ee	Polygon	Right Overbank	AMFR;SYOC;CIAR(no quant. data)	no data	Surface moist	Oxidized Root	PSSA	0.04
							Channels		
	1f	Polygon	Right Overbank	AMFR(90%)	1.00, 1.00	Surface moist	Not Det.	PSSA	0.01
	1g	Polygon	Right Overbank	JUBA(80%);SYOC(10%)	2.5, 1.33	Surface moist	Surf. dk gray to	PEMA	0.01
							6" and cobbly		
	1h	Polygon	Chann./Overbank	SAEX(25%);AMFR(20%);AGSM(10%);	1.89, 1.72	Surf Moist.;Chann.	Cobbly	PSSC	1.12
		band		CANE(10%);SCPA/SCVA(5%);SOGI(5%)		intermittent flow			
				PODE(15%);TYLA(2%);SAAM(5%)					
South									
Intercep.	1i-1j ✓	Polygon	Beginning South	COBBLE/BOULDER(15%);TYLA(50%);	1.50, 1.24	Surface sat.	Boulders	PEMFx	0.34
Ditch--			Interceptor Ditch	OPEN WATER(10%);PODE(10%)					
WOCM2									
to	1j-1k ✓	Polygon	Continue S. Inter-	TYLA(70%);BOULDERS(20%);	1.50, 1.10	Surface sat.	Boulders	PEMCx	1.68
WOCM4			ceptor Ditch	SAEX(5%);PODE(5%)					
Sept. 28	1k-1l ✓	Polygon	Continue S. Inter-	TYLA(75%);BOULDERS (15%);	1.67, 1.10	Surface sat.	Boulders	PEMCx	0.7
		crossing	ceptor Ditch	PODE(5%);					
	1l-1m ✓	Polygon	Continue S. Inter-	TYLA(75%);BOULDERS(15%);	1.00, 1.0	Sat. in upper 10"	Boulders, Silt	PEMCx	0.23
			ceptor Ditch	SILT (10%)					
	1n	Polygon	C-2 Diversion	TYLA(40%);PODE(20%);SAAM(5%);	1.50, 1.50	Sat. in upper 10"	Boulders	PEMCx	0.78
			Channel	BOULDERS(15%)					
	1o	Polygon	C-2 Diversion	BOULDERS(35%);PODE(20%);AGST	2.17, 2.00	Sat. in upper 10"	Boulders	PEMCx	0.12
			Channel	(5%);UNCONS.BOTT.(5%);SAEX(5%);					
				POCO(5%)					
	1p	Polygon	C-2 Diversion	SAEX(100%)	1.00, 1.00	Sat. in upper 10"	Boulders	PSSCx	0.04
			Channel						
	1q	Polygon	C-2 Diversion	TYAN(70%);ELE1(10%);AMFR(5%);	1.86, 1.29	Sat. in upper 10"	Not Det.	PEMCx	0.2
			Channel	SAAM(5%);AMPS(5%);BAOR(5%);					
				HOJU(5%)					
	1r	Polygon	C-2 Diversion	OPEN WATER(80%);UNCONS.	1.00, 1.00	Ponded water	Not Det.	PUBHx	0.02
			Channel	BOTTM. (20%)		12" deep; fish			
	1s	Polygon	C-2 Diversion	TYAN(80%);AMFR(5%);SAAM(1%);	1.00, 1.00	Water marks/drift	Not Det.	PEMCx	0.12
			Channel	SAEX(1%)		lines			

Intercep.	1t	Polygon	C-2 Diversion	TYLA(30%); AMFR(10%);SAAM(30%);	1.40, 1.13	Sat. in Upper 10"	Not Det.	PEMCx	0.05
Ditch--			Channel	ELE1(5%);AGST(5%)					
WOCM2	1u	Polygon	Natural Channel	AGST(20%);SAEX(5%);CAIN(20%);	2.17, 2.90	Surface dry	Not Det.	PEMA	0.04
to WOCM4				AGCA(10%);SCPA(1%);AMFR(2%)					
WOCM4									
	1v	Polygon	Natural Channel	TYLA(30%);ASLA(5%);RUME(5%);	2.00, 1.57	Sat. in upper 10"	Not Det.	PEMC	0.06
Sept. 28				JUBA(10%);SAAM(5%);SCAM(2%);					
				HOJU(5%)					
	1w	Polygon	Natural Channel	SAEX(70%);ASLA(10%);ELE1(10%)	2.00, 1.22	Sat. in upper 10"	Not Det.	PSSC	0.01
	2aa ✓	Polygon,	C-2 Lower Draw-	TYLA(80%);LYAM(5%);EPCI(5%);	1.00, 1.00	Sat in upper 10"	Mottling at 4';	PEMCh	0.13
			down zone	JUBA(2%)			Gley at 6"		
	2b	Polygon	C-2 Upper Draw-	TYLA (90%); ASPR(2%);EPCI(2%)'	1.71, 1.18	Varies; Sat at	Not Det.	PEMCh	0.1
			down zone	SCPA(2%);LYAM(2%);ELE1(2%);		average of 8"			
				CIAR(5%)					
	2bb ✓	Polygon	C-2 Upper Draw-	See 2 b above	See 2b	Saturated at	Not Det.	PEMBh	0.47
			down Zone			surface			
	2c ✓	Polygon	C-2 Lower Draw-	XAST(20%);POMO(30%);HOJU(10%);	1.93, 2.07	Surf. dry	Not Det.	PEMCh	0.72
			down zone	SCVA(5%);ECMU(1%);POPE(1%);					
				TYLA/TYAN(5%); PODE(2%);SCPA(1%);					
				SAEX(1%);ASPR(2%);RUME(1%);					
				LYAM(1%);AMPS(15%);CIAR(2%);					
				JUTO(2%)					
	2d ✓	Polygon	Joins Interceptor	TYAN(80%);SAEX(5%);SAAM(5%);	1.67, 1.14	Surface sat.	Not Det.	PEMBx	0.11
		(ditch)	Ditch to C-1 pool	PODE(5%);AGST(2%);AMFR(2%)					
	2e ✓	Polygon	Isolated natural	AMFR(30%);COBBLE(60%);UPLAND	2.00, 1.30	Surface dry	Not Det.	PSSA	0.11
			channel segment	PLANTS(10%)					
	2f ✓	Polygon	C-2 pool	OPEN WATER (100%)	1.00, 1.00	Depth> 6.6 '	Not Det.	L1UBH	3.87
	2cc	Linear	S. Side of Pool	Splash Zone/Drawdown Zone	No data	Saturated to dry	Not Det.	PEMAh	0.04
WOCM5									
Oct. 28	10a	Polygon	S. Aspect, Upper	JUBA(60%);CIAR(20%);BRIN(10%);	4.25, 2.02	Surface dry, in	Not Det.	PEMA	0.05
			Slope	VETH(1%)		old cattail litter			
	10b	Polygon	S. Aspect, Mid	JUBA((90%);CIAR(15%);VETH(1%)	3.00, 1.45	Surface dry, in old	Not Det.	PEMA	0.002
			Slope	(baltic rush in dwarf condition)		sprayfield drain.			

WOCM7									
	1a	Polygon	Chann./Banks	PODE(10%);AMFR(30%);SAAM(20%);	1.80, 1.27	Surface dry	Boulders/Cobble	PSSC	0.2
Sept. 29				SAEX(30%);RUME(2%)					
	1b	Linear	Small Ditch along	AMFR(40%);SAEX(40%);AGSM(10%)	2.00, 1.33	Surface dry	Not Det.	PSSA	0.02
			Channel						
	1c	Polygon	Chann./Banks	AMFR(40%);SAEX(20%);COBBLES(20%)	2.00, 1.28	Surface dry	Not Det.	PSSC	0.08
				RUME(5%);AGCA(5%)					
	1d	Polygon	Chann./Banks---	AMFR(65%);AMPS(10%);HYPE(5%);	3.17, 1.73	Surface dry	Not Det.	PSSA	0.29
			Origin, Mower Dit.	RUME(5%);AGCA(5%);AGSM(5%)					
	1e	Polygon	Channel of Mower	AMFR(50%);TYLA(5%);BAOR(3%);	2.38, 1.41	Surface dry	Not Det.	PSSCx	0.19
			Ditch	ELE1(20%);AGST(3%);SYOC(2%);					
				HOJU(5%);RUME(5%)					
	1f	Polygon	Mower Ditch	CANE(15%);ELE1(20%);HOJU(10%)	1.88, 1.46	Surface dry	Not Det.	PEMCx	0.04
			Channel	RUME(5%);SCVA(5%);AMFR(10%);					
				TYLA(1%);HYPE(1%)					
	1g	Polygon	Mower ditch &	AMFR(40%);ELE1(30%);TYLA(2%);	1.50, 1.31	Sat. in upper 10"	Not Det.	PSSCx	0.31
			Overbank	LYAM(2%);CAIN(5%);CANE(5%);					
				CIAR(10%);SCVA(2%)					
	1h	Linear	Mower Ditch	ELE1(50%);JUTO(10%);TYLA(5%);	1.00, 1.00	Saturated	Not Det.	PEMBx	0.02
				LYAM(5%);SCVA(10%);CANE(5%)					
	1i	Linear	Mower Ditch	ELE1(90%);LYAM(5%)	1.00, 1.00	Sat. in upper 10"	Not Det.	PEMCx	0.02
	1j	Point	Adjacent to ditch	JUBA(85%);AMFR(5%);CIAR(5%);	2.50, 1.19	Surface dry	Not Det.	PEMC	0.01
			in low area	POPR(1%)					
	1k	Linear	Mower Ditch	ELE1(40%);JUBA(20%);CANE(5%);	2.29, 2.21	Surface dry	Cobble bottom	PEMCx	0.02
				AMFR(10%);POPR(10%);POCA(5%);					
				SYOC(2%)					
	1l	Polygon	Mower Ditch, plus	AMFR(40%);ELE1(20%);HOJU(10%);	3.00, 1.98	Surface dry	Cobble Bottom	PSSCx	0.03
			Adjacent Banks	AGST(5%);RUME(3%);SYOC(5%);					
				POCA(5%);POPR(5%);AGCA(5%)					

WOCM7	1m	Linear	Mower Ditch	ELE1(50%);AMFR(15%);TYLA(5%);	2.10, 2.51	Surface dry	Mottled at 4"	PEMCx	0.14
Sept. 29				LYAM(5%);CANE(2%);PODE(2%);					
				SCVA(2%);SYOC(5%);CIAR(10%):					
				HYPE(2%)					
	1n	Linear	Mower Ditch	SCVA(20%);CANE(20%);LYAM(10%);	2.14, 2.05	Surface dry	Mottling & acc.	PEMCx	0.11
				AMFR(20%);XAST(5%);CIAR(20%);			of surface debris		
				AGSM(10%)					
	1o	Polygon	Mower Ditch, SW	AMFR(60%);ELE1(10%);COBBLE(10%);	2.13, 1.38	Surface dry	Not Det.	PSSAx	0.3
			02SED mon. sta.	HOJU(2%);SPPE(2%);LYAM(2%);					
				AGSM(5%);PAVA(5%);					
	1p	Polygon	Low Area along	JUBA(60%);SPPE(5%);AMFR(2%);CIAR	2.86, 1.80	Surface dry	Not Det.	PEMA	0.05
			Woman Creek	(15%);AGSM(5%);VETH(1%);OPU1(1%)					
WOCM8									
Sept. 29	1a	Point	Stream Overbank	AMFR(70%);TORY(5%);AMPS(5%);	3.00, 1.58	Surface dry	Not Det.	PSSA	0.005
			Areas	ROAR(1%);SYOC(10%)					
	1b	Polygon	Stream Overbank	AMFR(70%);SYOC(10%);AGSM(5%);	3.50, 1.77	Surface dry	Not Det.	PSSA	0.03
			Area	AGCA)5%);ROAR(2%);GLLE(2%)					
	1c	Polygon	Stream overbank	JUBA(40%);GLLE(20%);ROAR(10);	3.25, 2.67	Surface dry	Not Det.	PEMA	0.02
			Area	POPR(20%)					
	1d	Polygon	Chann./Overbank	AMFR(40%);SAEX(10%);ELE1(10%);	2.60, 1.82	Surface dry	Not Det.	PSSC	0.81
			and Banks	IRMI(2%);PODE(5%);AGCA(5%);POCA					
				(5%);BAOR(3%);SYOC(5%);BRTE(5%)					
	1e	Polygon	Excavated Pond	OPEN WATER and COBBLE	1.00, 1.00	Depth 3-4 ft,	Not Det.	PUBHx	0.01
			in Channel						
	1ee	Linear	Zone along Pond	SCAM(20%);AMFR(45%);JUTO(10%);	1.33, 1.29	Surf. sat . in upper	Not Det.	PSSCx	0.01
				EQU1(10%);SCVA(5%);POMO(2%);		10"			
				ASPR(5%);SAEX(5%)					
	1f	Polygon	Chann./Overbank	SAEX(5%);AMFR(50%);PODE(5%)	2.86, 2.15	Surface dry	Not Det.	PSSA	0.29
				AMPS(5%);ASPR(5%);ROAR(5%);					
				AGSM/AGCA(20%)					
	1g	Polygon	Right Overbank	AMFR(30%);BRTE(20%);AMPS(5%);	3.20, 3.05	Surface dry	Not Det.	PSSA	0.05
				ART1(5%);UPLAND PLANTS(40%)					

WOCM8	1h	Polygon	Chann./Overbank	AMFR(40%);POAN(15%);TYLA(5%);	2.33, 1.67	Surface dry	Not Det.	PSSC	0.3
Sept. 29				ELE1(10%);AGCA(10%);POCO(10%)					
	1i	Polygon	Right Overbank	JUBA(70%);AGSM(15%);CIAR(8%);	3.25, 1.86	Surface dry	Not Det.	PEMA	0.02
				BRTE(5%)					
	1j	Polygon	Chann./Overbank	AMFR(40%);SAEX(5%);BAOR(5%);	2.00, 1.41	Surface dry	Not Det.	PSSC	0.35
				POAN(5%);SAAM(5%);JUBA(20%)					
				ROAR(5%)					
	1k	Polygon	Old Channel	AMFR(30%);JUBA(30%) UPLAND	2.00, 2.20	Surface dry	Not Det.	PSSA	0.02
			Scour Feature	GRASSES(40%)					
	1l	Polygon,	Old Channel	JUBA(40%);HOJU(10%);CIAR(50%)	2.67, 2.70	Surface damp	Dk. gray surf.	PEMA	0.05
			Scour Feature				horizon		
	1m	Polygon	Old Channel	SPPE(50%);JUBA(40%);CAPR(2%);	2.80, 1.76	Surface damp	Dk gray surf.	PEMC	0.08
			Scour Feature	CIAR(5%);POCO(2%)			horizon		
	1n	Polygon	Old Channel	TYLA(30%);JUBA(40%);EPCI(5%);	2.00, 1.53	Surface damp	Dk gray surf.	PEMC	0.24
			Scour Feature	CAPR(10%);CIAR(10%)			horizon, oxid.		
							root chann.		
	1o	Polygon	Chann./Overbank	AMFR(60%);SAAM(5%);AMPS(10%)	2.67, 1.76	Surface dry	Not Det.	PSSA	0.09
				POCO(10%);ASSP(2%);AGCA(5%)					
	1p	Polygon	Chann./Overbank	AMFR(40%);PODE(30%);AGCA(20%)	3.00, 2.50	Surface dry	Not Det.	PSSA	0.15
				POPR(10%)					
	1q	Polygon	Channel	COBBLE (40%);UNCONS.BOTT.(20%);	Not Det.	Surface dry	Cobbly bed	R4SBJ	0.03
				WETLAND VEG(10%); OTHER(20%)					
	1r	Polygon	Chann./Overbank	AMFR(40%);AMPS(5%);ART1(10%);	3.00, 2.40	Surface dry	Cobbly bed	PSSA	0.47
				AGSM(10%);POAN(5%);ELE1(2%);					
				BAOR(2%);HYPE(2%);POCO(10%)					
	1s	Polygon	Channel/Banks	AMFR(20%);SAEX(20%);SAAM(5%);	2.33, 2.44	Surface dry	Not Det.	PSSC	0.16
				POAN(5%);POCO(20%);AGCA(20%)					
	1t	Polygon	Channel	COBBLE(80%)	N/A	Surface dry	Cobbly bed	R4SBJ	0.01
	1u	Polygon	Channel/Banks	AMFR(40%);SAEX(10%);ASSP(10%);	2.71, 1.94	Surface dry	Not Det.	PSSC	0.06
				ASPR(5%);AGST(10%);NECA(5%);					
				CIAR (5%)					

WOCM8									
Sept.29	1v	Polygon	Left Overbank	JUBA(30%);SCAM(15%);TYLA(10%);	2.14, 1.85	Surf. damp &	Soil value/	PEMC	0.17
				CAPR(5%);AMFR(15%);CIAR(20%);		hummocky	chroma is 3/1		
				AGSM(5%);					
	1w	Polygon	Chann./Overbank	POAN(30%);JUBA(30%);SAEX(5%);	1.86, 1.84	Surface damp &	Not Det.	PFOC	0.25
				SAAM(5%);AMFR(15%);ASSP(5%);		hummocky			
				SOGI(5%)					
	1x	Polygon	Chann./Overbank	AMFR(30%);POAN(10%);SAEX(10%);	2.86, 2.29	Surface dry	Not Det.	PSSC	0.06
				AGST(10%);ASPR(5%);CIAR(10%);					
				AGSM(10%)					
	1y	Polygon	Chann./Overbank	POAN(30%);AMFR(20%);SAEX(20%);	2.33, 2.00	Surface dry	Cobble bottom	PFOC	0.09
				SAAM(10%);AGSM(5%);AGCA(5%)					
	1z	Polygon	Chann./Overbank	SAEX(35%);AMFR(20%);BAOR(5%)	2.63, 1.58	Surface dry	Not Det.	PSSC	0.27
				CIAR(10%);JUBA(20%);AGSM(2%);					
				AGCA(2%);AGST(2%)					
	2a	Polygon	Chann./Overbank	PODE(60%);AMFR(20%);AGCA(20%)	2.67, 2.80	Surface dry	Not Det.	PFOC	0.11
	2b	Polygon	Left Overbank	JUBA(60%);CANE(5%);AMFR(10%);	2.33, 1.36	Surf. sat . in upper	Not Det.	PEMC	0.07
				CAPR(5%);AGCA(5%);ROAR(2%)		10"			
	2c	Point	Left Overbank	JUBA(90%);CIAR(5%)	2.50, 1.16	Surface dry	Not Det.	PEMA	0.005
	2d	Polygon	Small Drainage	AMFR(50%);SPPE(20%);PAVA(10%);	2.75, 1.89	Surface dry	Not Det.	PSSC	0.03
			Channel	CIAR(10%)					
	2e	Polygon	Chann./Overbank	AMFR(30%);SAEX(10%);POAN(10%);	2.43, 2.24	Surface dry	Not Det.	PSSC	0.43
				AMPS(5%);TYLA(5%);AGCA(10%);					
				AGSM(15%)					
	2f	Polygon	Old Channel	AMFR(60%);AMPS(10%);AGSM(10%);	3.00, 1.89	Surface dry	Not Det.	PSSA	0.16
			Scour Feature	POPR(10%)					
	2g	Polygon	Chann./Overbank	AMFR(55%);AGCA(30%);AGST(2%);	3.12, 2.24	Surface dry	Not Det.	PSSA	0.56
				ASPR(2%);ART1(5%);GRSQ(2%)					

APPENDIX D

WETLAND INVENTORY

SMART DITCH DRAINAGE

LOWER WOMAN CREEK BASIN

AND UPPER BIG DRY BASIN

		SMART DITCH DRAINAGE, LOWER WOMAN CREEK BASIN AND UPPER BIG DRY BASIN 1/							
Drain. Basin	Wetl. No.	Feature	Geomorphology	Vegetative Composition & Cover (%)	Hydroph. Status	Hydrologic Indicator	Soils Indicator	Wetl. Type	Acres
SDM	1a	Polygon	Left Channel	TYLA(50%);JUBA(30%);CANE(5%);	2.44, 1.32	Sat. in upper 10"	Not Det.	PEMB	0.06
			Overbank	RUME(2%);JUTO(2%);AGST(2%);					
Sept. 30				POCO(3%);AGCA(2%);ANGE(3%)					
	1b	Polygon	Channel	JUBA(70%);CANE(10%);TYLA(5%);	2.00, 1.14	Surface flow, 4"	Not Det.	PEMF	0.09
				RUME(5%);AGST(2%);POL1(2%);		deep			
				LYAM(3%);SCVA(1%);UPL(2%)					
	1c	Polygon	Channel/Bank	Same as 1b	2.00, 1.14	Surface flow, 4"	Not Det.	PEMF	0.14
	1d	Polygon	Channel	JUBA(70%);CANE(10%);JUTO(5%)	2.00, 1.13	Surface flow	Not Det.	PEMF	0.02
				AGST(2%);POL1(2%);LYAM(3%);					
				SCVA(1%);RUME(1%);ASER(1%)					
	1e	Polygon	Channel/Bank	Same as 1b, except 1 e has less than	2.00, 1.13	Surface flow	Not Det.	PEMF	0.24
				1%GEAL;1f has1%HOJU;l%POPR					
	1f	Polygon	Channel	Same as 1e	2.00, 1.13	Surface flow, two	Not Det.	PEMF	0.13
	1g	Linear	Channel	See 1b, except no cattail	2.00, 1.21	Surface flow	Not Det.	PEMF	0.06
	1h	Polygon	Channel/Bank	See lb	2.00, 1.14	Surface flow	Not Det.	PEMF	0.07
	1 i	Linear	Channel	See 1 b	2.00, 1.14	Surface flow	Not Det.	PEMF	0.04
	1k	Polygon	Overbank along	JUBA(70%);AGST(10%);TYLA(3%);	3.00 1.69	Surface flow	Not Det.	PEMF	0.1
			Braided Channel	PHPR(3%);POPR(10%);CIAR(3%);					
	1l	Polygon	Chann./Overbank	Same as lb, except some CIAR (5%)	2.00, 1.30	Surface flow	Not Det.	PEMF	0.17
	1m	Polygon	Channel	Same as 1l	2.00, 1.30	Surface flow	Not Det.	PEMF	0.03
	1n	Polygon	Channel	Same as 1l	2.00, 1.30	Surface flow	Not Det.	PEMF	0.14
	1 o	Polygon	Left Channel	JUBA(60%);SPPE(5%);VEHA(2%);	3.20, 1.93	Sat. in upper 12"	Mottling at 6"	PEMC	0.1
			Overbank	CIAR(15%);AGSM(5%);POPR/POCO			chroma 1-2		
				(10%);ASER(1%);ANGE(3%);ASSP(1%)					
				PAVA(3%).					
	1p	Linear	Channel	JUBA(60%);JUTO(20%);ASIN(5%);	2.50, 1.37	Flowing water in	Not Det.	PEMF	0.03
				SYOC(2%);CIAR(5%);PAVA(5%)		1-2' wide channel			

1/ For natural "slope" wetlands, special hydrology (surface seepage) is indicated by an asterisk (*) inserted in the wetland number column. Special wetland types created or modified by impoundment (h), excavation (x), ditching (d) or artificial substrate (r) are shown in the wetland type column.

SDM	1q	Polygon	Right Overbank	JUBA(50%);CAPR(20%);ASIN(3%);	2.44, 1.89	Sat. in upper 12"	Not Det.	PEMC	0.06
			of Channel	AGST(2%);VEHA(1%);LYAM(5%);					
Sept. 30				CIAR(10%);PAVA(2%);SYOC(2%)					
	1 r	Polygon	Channel/Bank	JUBA(50%);CANE(10%);ASIN(10%);	2.0, 1.12	Flowing water in	Not Det.	PEMB	0.04
				SAEX(2%);SYOC(2%);VETH(1%)		1-2' wide chann.			
	1 s	Polygon	Chann./Overbank	SAEX(90%);JUBA(5%); CIAR(5%)	2.0, 1.06	Sat. in upper 12"	Not Det.	PSSC	0.08
	1t	Polygon	Channel/Bank	JUBA(40%);TYLA(20%);CANE(15%);	2.20, 1.50	Surface sat.	Not Det.	PEMB	0.1
				SYOC(5%);CIAR(10%)					
	1u	Linear	Left Channel	JUBA(40%);TYLA(10%);SPPE(5%);	2.88, 2.18	Sat. in upper 12"	Not Det.	PEMC	0.09
			Overbank	ASSP(2%);VETH(5%);CIAR(20%)					
				GLLE(2%);SYOC(5%)					
	1w, 1v	Polygons	S. Aspect, Lower	JUBA(60%);JUTO(5%);CANE(5%)	2.33, 1.6	Surface sat.	Not Det.	PEMB	0.05
			Slope	AGST(5%);CIAR(10%);SYOC(5%)					
	1x, 1y	Points	S. Aspect, Mid	JUBA(60%);CIAR(20%);SYOC(5%);	3.40, 2.11	Surface dry	Not Det.	PEMA	0.02
			Slope	POCO(5%); VETH(5%)					
	1z	Polygon	S. Aspect, Mid	JUBA(50%);SPPE(10%);CIAR(20%);	2.50, 1.94	Surface dry	Not Det.	PEMC	0.05
			Slope	ASSP(5%)					
	2a	Polygon	S. Aspect, Lower	JUBA(40%);SPPE(20%);LYAM(5%);	2.00, 1.94	Sat in upper 12"	Not Det.	PEMC	0.01
			Slope	CIAR(20%)					
	2b	Polygon	Channel/Bank	CANE(40%);JUBA(20%);JUTO(5%)	1.63, 1.26	Flowing water	Not Det.	PEMF	0.07
				CAEM(5%);TYLA(10%);SAEX(5%);					
				ASPR(5%);GLLE(5%)					
	2c	Polygon	E. Aspect, Mid.	JUBA(30%);TYLA(30%);SAAM(5%);	2.14, 1.47	Surface dry	Not Det.	PEMC	0.04
			Slope	LYAM(5%);AGST(5%);GLLE(5%);					
				ANSC(5%);					
	2d	Polygon	Channel/Banks	JUBA(30%);CANE(40%);ASPR(10%);	2.83, 1.68	Flowing water	Not Det.	PEMF	0.06
				HYPE(5%);SYOC(5%);(CIAR(5%)					
	2e	Polygon	Channel/Banks	SAEX(40%);SYOC(20%);JUBA(20%);	2.17, 1.84	Surface sat.	Not Det.	PSSC	0.02
				EPCI(5%);ASPR(5%);ASSP(5%)					

SDM1	1a	Polygon	Channel/Banks	JUBA(50%);CANE(10%);ASIN(5%);	1.50, 1.33	Flowing water	Not Det.	PEMF	0.02
				ELE1(10%);JUTO(10%);AGR1(10%)					
	1b	Polygon	Right Overbank	JUBA(50%);CIAR(30%);SYOC(10%);	3.25, 2.42	Surf. dry, over-	Not Det.	PEMC	0.02
			of Channel	ROAR(5%)		bank seep			
	1c*	Polygon	Right Overbank	JUBA(60%);JUTO(10%);LYAM(5%);	1.60, 1.32	Flowing, over-	Not Det.	PEMB	0.01
			of Channel	CANE(10%);SYOC(10%)		bank seep			
	1d	Polygon	Chann./Overbank	CANE(20%);ASPR(5%);JUIN(5%);	1.86, 1.35	Flowing water	Not Det.	PEMF	0.12
				JUTO(10%);JUBA(20%);EQU1(5%)					
				AMFR(20%)					
	1e*	Polygon	NE Aspect,	TYLA(90%);JUBA(9%);(RUME(1%)	1.67, 1.02	Standing water	Not Det.	PEMF	0.18
			Upper Slope						
	1 f	Polygon	NE Aspect,	JUBA(55%); CIAR(30%);AGSM(10%)	3.00, 2.26	Surface dry	Not Det.	PEMC	0.13
			Upper Slope						
	1 g	Polygon	NE Aspect,	AMFR(90%);CIAR(10%)	2.50, 1.30	Surface dry	Not Det.	PSSC	0.06
			Upper Slope						
	1 h	Polygon	Channel/Bank	SAEX(75%);SPPE(5%);JUBA(15%)	1.33, 1.05	Flowing water--	Not Det.	PSSC	0.03
						small channel			
	1 i	Polygon	Channel/Bank	JUBA(60%);CANE(30%);ASER(5%);	2.17, 1.17	Flowing water	Not Det.	PEMF	0.03
				AGST(2%);LYAM(2%);GLLE(1%)					
	1 j	Polygon	SE Aspect, Lower	AGST (90%)	3.00, 3.00	Surface dry	Not Det.	PEMA	0.02
			Slope						
	1k	Polygon	SE Aspect, Upper	TYLA(15%);CANE(30%);CAEM(20%);	1.00, 1.0	Surface sat.	Not Det	PEMB	0.02
			Slope	JUBA(20%)					
	1 l	Polygon	SE Aspect, Mid	TYLA(40%);CANE(20%);EPCI(5%);	1.80, 1.56	Surface sat.	Not Det.	PEMC	0.03
			Slope	AGST(20%);PODE(5%)					
	1m	Polygon	Channel/Bank	JUBA(40%);CANE(10%);TYLA(10%);	2.00, 2.05	Flowing water--	Not Det.	PEMB	0.26
				MEAR(2%);CAEM(1%);SYOC(25%);		small channel			
				CIAR(10%)					
	1n	Polygon	Channel/Bank	SAL1(40%);JUBA(30%);CANE(20%);	1.60, 1.15	Flowing water-	Not Det.	PSSC	0.02
				JUTO(5%);AGCA(5%)		small channel			
	1o	Polygon	Channel/Bank	JUBA(40%);CANE(20%);EPCI(5%);	1.29, 1.09	Flowing water-	Not Det.	PEMF	0.08
				LYAM(5%);MEAR(5%);JUTO(2%);		small channel			
				VEHA(2%)					

SDM1	1p	Polygon	Chann/Overbank	SAEX(40%);JUBA(20%);CANE(5%);	2.50, 1.37	Flowing water-	Not Det.	PSSC	0.04
Sept. 30				HYPE(5%);CIAR(5%);SYOC(5%);		small channel			
	1 q	Polygon	Channel/Bank	JUBA(40%);CANE(20%);SAEX(10%);	1.50, 1.25	Flowing water	Not Det.	PEMF	0.03
				EQU1(10%)					
	1 r	Polygon	Chann./Overbank	SAEX(60%);GLLE(10%);CIAR(10%);	2.75, 1.78	Flowing water in	Not Det.	PSSC	0.02
				SOGI(10%)		narrow channel			
	1 s	Polygon	Chann./Overbank	Same as 1 q, except for a AMFR	1.50, 1.70	Flowing water	Not Det.	PEMF	0.06
	1t	Point	Bank	inclusion, 15' x 15' = 1t					
	1ss	Linear	Channel	TYLA (90%); JUBA (8%);VEHA(2%)	1.33; 1.02	Flowing water	Not Det.	PEMF	0.01
	1 u	Polygon	Channel/Bank	Same as 1ss	1.33, 1.02	Standing/flowing	Not Det.	PEMF	0.05
						water			
	1 v	Polygon	Chann./Overbank	SAEX(85%);SAAM(5%);GLLE(2%)	2.00, 1.07	Standing water	Not Det.	PSSC	0.29
	1 w	Linear	Channel	CANE(60%);JUBA(30%);AGSM(10%)	2.00, 1.30	Flowing water	Not Det.	PEMF	0.01
	1 x	Polygon	Chann./Overbank	JUBA(50%);CANE(15%);SYOC(10%);	2.25, 1.44	Flowing water in	Not Det.	PEMC	0.01
				ASSP(2%)		small channel			
	1 y	Polygon	Chann./Overbank	SAEX(50%);CANE(20%);JUBA20%)	1.00, 1.00	Flowing/standing	Not Det.	PSSC	0.05
						water			
	1z	Polygon	Chann./Overbank	PODE(60%);SAEX(25%);POAL(10%);	3.00, 2.65	Flowing water in	Not Det.	PFOC	0.12
				TORY(5%)		narrow channel			
	2a	Polygon	Chann./Overbank	SAEX(85%)	1.00, 1.00	Flowing/standing	Not Det.	PSSC	0.05
						water			
	2b	Linear	Channel	JUBA(30%);CANE(10%);SAEX(10%);	2.14, 1.82	Flowing water	Not Det.	PEMF	0.02
				PODE(5%);AGCA(10%);SAAM(10%);					
				CIAR(10%)					
	2c	Polygon	Chann./Overbank	SAEX(85%);SAAM(10%)	1.00, 1.00	Flowing water in	Not Det.	PSSC	0.05
						narrow channel			
	2d	Polygon	Left Overbank	JUBA(50%);CANE(5%);SPPE(5%);	2.67, 1.89	Surface dry	Not Det.	PEMC	0.03
				GLLE(5%);SYOC(10%);CIAR(10%)					
	2e	Polygon	Chann./Overbank	JUBA(60%);VEHA(5%);CANE(15%);	2.17, 1.37	Flowing water	Not Det.	PEMF	0.06
				LYAM(5%);CIAR(5%);GLLE(5%)					
	2 f	Polygon	Left Overbank	TYLA(50%);JUBA(50%)	1.00, 1.00	Surface dry	Not Det.	PEMC	0.02

SDM1	2 g	Polygon	Right Overbank	SAEX(60%);JUBA(30%);TYLA(10%)	1.00, 1.00	Surface dry	Not Det.	PSSC	0.04
Sept. 30									
	2h	Polygon	Chann./Overbank	JUBA(55%);TYLA(30%);ASSP(2%);	2.60, 1.35	Surface moist	Not Det.	PEMC	0.41
				CIAR(8%);SYOC(2%)					
	2 i	Polygon	Chann./Overbank	JUBA(50%);VEHA(10%);CANE(10%);	1.80, 1.44	Sat. in upper 12"	Not Det.	PEMB	0.06
				SAEX(10%);CIAR(10%)					
	2 j	Polygon	Chann./Overbank	JUBA(50%);CANE(20%);AGCA(10%);	2.20, 1.60	Flowing water	Not Det.	PEMB	0.02
		Band		LYAM(10%);CIAR(10%)		in small channel			
	2 k	Polygon	Chann./Overbank	JUBA(50%);VEHA(5%);CIAR(10%);	2.50, 1.58	Surface moist	Not Det.	PEMC	0.12
				ASSP(10%)					
	2 l	Polygon	Channel/Bank	SAEX(60%);JUBA(30%);EQU1(5%);	2.00, 1.14	Flowing water	Not Det.	PSSC	0.01
				ASSP(2%)					
	2 m	Polygon	Left Overbank	SAEX(90%)	1.00, 1.00	Flowing water	Not Det.	PSSC	0.01
	2n	Polygon	Channel/Bank	JUBA(90%);AGSM(10%)	2.50, 1.30	Flowing water	Not Det.	PEMC	0.07
						in small channel			
	2 o	Polygon	Right Overbank	SAEX(90%)	1.00, 1.00	Flowing water	Not Det.	PSSC	0.01
	2p	Polygon	Channel/Bank	JUBA(60%);SAEX(20%);EPCI(10%)	1.00, 1.00	Flowing water	Not Det.	PEMF	0.01
	2r	Polygon	Channel/Bank	SAEX(90%)	1.00, 1.00	Flowing water	Not Det.	PSSC	0.01
						in small channel			
	2 s	Polygon	Channel/Bank	JUBA(70%);CANE(25%);CIAR(5%)	2.00, 1.15	Flowing water	Not Det.	PEMF	0.07
	2 t	Polygon	Channel/Bank	SAEX(90%);(JUBA(10%)	1.00, 1.00	Standing water	Not Det.	PSSC	0.02
SDC	1a	Polygon	Channel/Bank	JUBA(50%);CANE(25%);SPPE(20%);	1.25, 1.21	Channel dry	Not Det.	PEMC	0.02
				LYAM(2%)					
	1 b	Polygon	Channel/Bank	JUBA(50%);CANE(30%);CIAR(10%);	2.50, 1.47	Surface sat.	Not Det.	PEMB	0.03
				GLLE(5%)					
	1 c	Polygon	Right Overbank	JUBA(40%);SPPE(10%);CANE(10%);	2.67, 2.21	Surface dry	Not Det.	PEMC	0.05
			Seep Below Dam	SYOC(15%);GLLE(10%);CIAR(10%)					
	1 d	Linear	Seepage Chann.	CANE(60%); JUBA(20%);LYAM(5%);	2.13, 1.28	Surface sat.	Not Det.	PEMB	0.003
				EPCI(2%);CIAR(5%);GLLE(2%);					
				SYOC(2%)					

SDC	2 e	Polygon	Pond	OPEN WATER	1.00, 1.00	Water depth 5'	Not Det.	PUBHh	0.15
Sept. 30									
	2 ee	Linear	Around Pond	CANE(40%);JUTO(10%);LYAM(5%);	2.50, 2.05	Sat. in upper 12"	Not Det.	PEMCh	0.02
				CIAR(10%);GLLE(5%);SYOC(15%)					
	1 f	Polygon	Channel/Bank	JUBA(20%);CANE(20%);SPPE(2%);	2.00, 1.94	Surface Moist	Not Det.	PEMC	0.02
				RUME(2%);EPCI(2%);CIAR(5%);					
				LYAM(5%);PAVI(30%)					
	1 g	Polygon	Channel/Bank	JUBA(30%);EPCI(2%);GEAL(2%);	2.14, 1.40	Surface Moist	Not Det.	PEMC	0.11
				LYAM(5%);CANE(35%);SYOC(5%);					
				CIAR(5%)					
	1 h	Polygon	Channel/Bank	JUBA(30%);LEMI(5%);CANE(20%);	1.33, 1.38	Surface sat.	Not Det.	PEMB	0.02
				JUTO(10%);TYLA(5%);CIAR(10%)					
	1 i	Polygon	Channel	OPEN WATER	1.00, 1.00	Standing water	Not. Det.	PUBH	0.01
	1hh	Polygon	Channel	See 1 h	1.33, 1.38	Surface sat.	Not Det.	PEMB	0.02
	1 j	Polygon	Right Overbank	JUBA(30%);CANE(5%);AGST(5%);	2.60, 2.71	Surface dry	Not Det.	PEMC	0.01
				CIAR(15%);SYOC(30%)					
	1 k	Polygon	Left Overbank	JUBA(40%);CANE(10%);SPPE(10%);	2.50, 2.1	Surface dry	Not Det.	PEMC	0.12
				AGST(5%);CIAR(25%);ANGE(2%)					
	1 l	Polygon	Channel	OPEN WATER	1.00, 1.00	Standing water	Not Det.	PUBH	0.02
	1 m	Polygon	Chann./Overbank	JUBA(50%);SPPE(20%);CANE(10%);	1.75, 1.68	Surface sat.	Not Det.	PEMB	0.13
				JUTO(5%);JUIN(2%);EPCI(1%);					
				LYAM(1%);CIAR(15%)					
	1n	Polygon	Chann./Overbank	CANE(25%);JUBA(20%);CAEM(15%);	1.38, 1.18	Surface sat.	Not Det.	PEMB	0.04
				TYLA(3%);VEHA(2%);LYAM(5%);					
				AGST(5%)					
	1 o	Linear	Channel/Bank	JUBA(30%);JUTO(20%);CANE(10%);	2.75, 1.86	Surface dry	Not Det.	PEMC	0.03
				CIAR(15%);SYOC(5%);EQU(2%);					
				AGSM(2%);NECA(1%)					
	1p	Polygon	Channel	OPEN WATER	1.00, 1.00	Standing water	Not Det.	PUBH	0.005
Sept. 30	1 q	Polygon	Chann./Overbank	JUBA(60%);SPPE(10%);CANE(5%);	2.20, 1.63	Surface dry	Not Det.	PEMC	0.14
				PAVI(5%);LYAM(2%);VEHA(1%);					

SDC (1q cont'd)				AGST(5%);SYOC(10%);ELE1(5%);					
				GLLE(1%)					
SDA									
	1a	Polygon	Channel	TYLA(15%);CAPR(10%);JUBA(3%);	2.33, 3.30	Surface moist	Not Det.	PEMC	0.01
Oct. 1				EPCI(2%);CIAR(65%);AGSM(5%);					
	1b	Linear	Channel	TYLA(30%);JUBA(15%);SPPE(15%)	2.38, 2.18	Surface moist	Not Det.	PEMC	0.01
				JUTO(2%);AGST(2%)RUME(1%);					
				POPR(2%);CIAR(30%)					
	1c, 1d	Points	Channel	JUBA(80%);CAPR(10%);POPR(5%);	3.20, 1.36	Surface dry	Not Det.	PEMA	0.005
				AGSM(2%);AGCA(2%)					
	1e	Polygon	Channel/Banks	JUBA(60%);CAPR(10%);AGST(5%);	2.63, 1.78	Surface dry	Not Det.	PEMC	0.04
				LYAM(3%);CANE(3%);CIAR(10%);					
				GLLE(2%);SYOC(3%)					
	1f, 1g	Points	Channel	JUBA(80%);POPR(5%);SYOC(10%);	3.25, 1.60	Surface dry	Not Det.	PEMA	0.005
				CIAR(5%)					
	1h	Polygon	Channel/Banks	JUBA(60%);TYLA(15%);AGST(3%);	2.83, 1.79	Surface dry	Not Det.	PEMC	0.04
				SYOC(15%);POPR(5%);CIAR(5%)					
	1i	Polygon	Channel/Banks	JUBA(50%);CANE(10%);TYLA(5%);	2.13, 1.59	Surface dry	Not Det.	PEMC	0.07
				LYAM(2%);MEAR(2%);AGST(2%);					
				SYOC(10%);CIAR(5%)					
	1j	Polygon	Chann./Overbank	JUBA(60%);CAPR(10%);CIAR(20%);	3.38, 2.17	Surface dry	Not Det.	PEMC	0.06
				POCO(5%);AMPS(2%);POPR(5%);					
				VETH(1%);AGCA(2%)					
SDB	1a	Polygon	Channel/Banks	JUBA(30%);CANE(20%);EPCI(3%);	2.14, 2.00	Surf. hummocky	Not Det.	PEMC	0.15
				LYAM(2%);AGST(5%);POPR(5%);					
Oct. 1				CIAR(20%)					
	1b	Polygon	Chann./Overbank	JUBA(60%);CANE(15%);SPPE(2%);	1.71, 1.20	Surf. hummocky,	Not Det.	PEMB	0.08
				EPCI(5%);MEAR(2%);LYAM(2%);		saturated & some			
				CIAR(5%)		standing water			
	1c	Polygon	Channel/Banks	JUBA(60%);SPPE(10%);LYAM(5%);	1.57, 1.27	Surf. sat.; some	Not Det.	PEMF	0.05
				CANE(5%);TYLA(5%);ELE1(2%)		standing water			
				GLLE(5%)					
	1d	Polygon	Right Overbank	JUBA(70%);CANE(10%);EPCI(2%);	2.30, 1.26	Surf. Hummocky	Not Det.	PEMB	0.07
				SPPE(3%);AGST(2%);MEAR(1%);					

SDB (1d cont'd)				TYLA(1%);GLLE(2%);CIAR(1%);					
				SYOC(3%)					
	1e	Polygon	Channel/Banks	JUBA(50%);CANE(10%);TYLA(10%);	2.33, 1.61	Some standing	Not Det.	PEMF	0.16
				AGST(5%);CIAR(10%);GLLE(5%)		water			
	1f	Polygon	N. Aspect, Lower	JUBA(50%);CANE(5%)CIAR(25%);	3.00, 2.25	Surface dry	Not Det.	PEMA	0.02
			Slope	ASSP(1);SYOC(10%);AGSM(2%);					
				HYPE(2%)					
	1g	Polygon	Channel/Banks	TYLA(20%);ELE1(20%);JUBA(10%);	1.29, 1.24	Surface sat.	Not Det.	PEMB	0.12
				CANE(10%);JUTO(10%);LYAM(5%);					
				AGST(10%)					
	1h	Linear	Channel	AGST(50%);ELE1(10%);JUTO(10%);	2.30, 2.35	Sat. in upper 10"	Not Det.	PEMC	0.13
				JUBA(10%);LYAM(5%);TYLA(5%);					
				APO1(2%);ROAR(5%);GLLE(5%)					
				SYOC(2%)					
	1i	Point	Small Side Drain.	JUBA(60%);CIAR(30%);HYPE(5%)	3.00, 2.11	Surface dry	Not Det.	PEMA	0.003
	1j	Polygon	Chann./Overbank	JUBA(50%);LYAM(1%);CIAR(40%);	2.80, 2.47	Dry at Surface	Not Det.	PEMA	0.03
				AGSM(5%);POPR(4%)					
	1k	Polygon	Channel/Banks	SAEX(70%);HYPE(10%);GLLE(20%)	3.00, 1.90	Stream bed dry	Not Det.	PSSC	0.02
	1l	Polygon	Chann,/Overbank	JUBA(60%);TYLA(10%);EPCI(10%);	1.83, 1.26	Stream bed dry	Cobble	PEMC	0.04
				MEAR(5%);ASSP(5%);XAST(5%)					
	1m	Polygon	Chann./Overbank	JUBA(50%);CANE(10%);EPCI(5%);	2.00, 1.67	Stream bed dry	Not Det.	PEMC	0.35
				LYAM(5%);CIAR(10%);GLLE(10%)					
	1n	Polygon	Chann./Overbank	See l m	2.00, 1.67	Stream bed dry	Not Det.	PEMC	0.13
	1o	Point	Channel	JUBA(40%);CAPR(20%);SPPE(5%);	2.80, 2.50	Stream bed dry	Not Det.	PEMA	0.003
				CIAR(25%);AGSM(10%)					
	1p	Polygon	Channel/Banks	See 1 o	2.80, 2.50	Stream bed dry	Not Det.	PEMA	0.01
	1q	Polygon	Chann./Overbank	JUBA(30%);TYLA(5%);AGST(15%);	1.88, 1.84	Stream bed dry	Not Det.	PEMC	0.16
				LYAM(5%);EPCI(10%);CAPR(10%);					
				CANE(10%);CIAR(10%)					
	1r	Polygon	Channel/Banks	CAPR(25%);CANE(15%);EPCI(10%);	2.20, 2.20	Stream bed dry	Not Det.	PEMC	0.09
				GEAL(2%);SPPE(10%);XAST(5%);					
				AGST(15%);CIAR(10%);ASSP(2%)					
				LYAM(5%)					

SDM2									
	1a	Polygon	Chann./Overbank	JUBA(50%);CANE(10%);SAEX(10%);	2.50, 1.75	Flowing water	Not Det.	PEMC	0.18
Oct. 1				AGST(10%);AST1(5%);CIAR(10%);					
				SYOC(2%);EQU1(2%)					
	1b	Polygon	Channel Pool	OPEN WATER	1.00, 1.00	Standing water,	Not Det.	R4SBG	0.01
						8" deep			
	1bb	Linear	Around Pool	CANE (20%);JUBA30%); EQU1(20%)	1.67, 1.71	Sat. in upper 12"	Not Det.	PEMB	0.006
	1c	Linear	Channel	CANE(70%);JUBA(25%);SCPA(5%)	1.00, 1.00	Flowing water	Not Det.	PEMF	0.009
	1d	Polygon	Channel/Banks	SAEX(80%);CANE(10%);JUBA(5%);	1.75, 1.15	Flowing water	Not Det.	PSSC	0.01
				AGCA(5%)					
	1e	Polygon	Chann./Overbank	JUBA(45%);CANE(30%);TYLA(5%);	2.20, 1.60	Flowing water	Not Det.	PEMF	0.12
				CIAR(15%);SYOC(5%)					
	1f	Polygon	Chann/Overbank	SAEX(50%);CANE(15%);JUBA(15%);	2.00, 1.45	Flowing water	Not Det.	PSSC	0.05
				TYLA(5%);SYOC(5%);AGSM(10%);					
	1g	Polygon	Chann./Overbank	CANE(20%);JUBA(40%);VEHA(5%);	1.67, 1.68	Flowing water	Not Det.	PEMB	0.06
				LYAM(5%);EPCI(5%);CIAR20%)					
	1h	Polygon	Channel Confl.	JUBA(50%);CANE(10%);EPCI(5%);	2.13, 1.53	Saturated; flow-	Not Det.	PEMB	0.2
			Area	CAEM(10%);TYLA(5%);SYOC(5%);		ing water			
				HYPE(2%);CIAR(10%)					
SDM3									
	1a	Polygon	Pool in Channel	OPEN WATER, BUT RIMMED WITH	1.00, 1.00	Standing water,	Not Det.	R4SBG	0.005
				1'BAND OF JUBA(40%);CANE(30%);		2' depth			
				AGST(20%)					
	1b	Polygon	Pool in Channel	OPEN WATER(60%);ELE1(10%);	1.00, 1.00	Standing water,	Not Det.	R4SBG	0.003
				SCPA(20%);JUBA(10%)		8" Depth			
	1c	Polygon	Chann./Overbank	CANE(15%);JUBA(30%);MEAR(5%);	2.44, 2.10	Flowing water	Not Det.	PEMC	0.07
				VEHA(2%);LYAM(2%);AGSM(5%);					
				SYOC(10%);CIAR(10%);ASSP(5%)					
	1d	Polygon	Chann./Overbank	SAEX(80%);JUBA(20%)	1.00, 1.00	Flowing water	Not Det.	PSSC	0.24
	1e	Polygon	Channel	TYLA(95%)	1.00, 1.00	Flowing water	Not Det.	PEMF	0.01

SDM3	1f	Linear	Channel	OPEN WATER	1.00, 1.00	Standing water,	Not Det.	R4SBG	0.002
Oct. 1						8 inches deep			
	1g	Polygon	Chann./Overbank	JUBA(60%);CANE(10%);AGST(10%);	2.50, 1.69	Flowing water	Not Det.	PEMC	0.02
				VEHA(2%);CIAR(10%);GLLE(5%)					
	1h	Polygon	Chann./Overbank	SAEX(70%);JUBA(25%);AGSM(5%)	2.00, 1.15	Flowing water	Not Det.	PSSC	0.14
	1i	Polygon	Chann./Overbank	See 1g	2.50, 1.69	Flowing water	Not Det.	PEMC	0.03
	1j	Polygon	Chann./Overbank	SAEX(60%);JUBA(20%);SPPE(10%)	1.33, 1.11	Flowing water	Not Det.	PSSC	0.17
	1k	Polygon	Old Channel	PODE(40%);SAEX(15%);JUBA(20%);	2.67, 2.45	Channel dry	Not Det.	PFOC	0.11
				AGST(10%);AGCA(5%);AGSM(10%)					
	1l	Polygon	Channel	SAEX(60%);AMFR(10%);GLLE(5%);	3.00, 1.83	Surface sat.	Not Det.	PSSC	0.03
				SYOC(5%);AGSM(15%);NECA(2%)					
	1m	Polygon	Chann./Overbank	See 1l	3.00, 1.83	Surface sat.	Not Det.	PSSC	0.08
SDM4	1a	Polygon	Chann./Overbank	PODE(5%);SAEX(50%);JUBA(30%);	1.50, 1.11	Surface sat.	Not Det.	PSSC	0.2
				CANE(10%)					
	1b	Polygon	Chann./Overbank	PODE(50%);JUBA(10%);CANE(5%);	2.17, 2.58	Surface sat.	Not Det.	PFOC	0.12
				SAEX(10%);AGST(10%);AGCA(10%)					
	1c	Point	Chann./Overbank	PODE(25%);JUBA(55%);AGST(30%)	2.33, 2.00	Surface dry	Not Det.	PEMC	0.002
	1d	Polygon	Chann./Overbank	JUBA(40%);CAPR(20%);CANE(20%);	2.20, 1.70	Surface dry	Not Det.	PEMC	0.03
				SPPE(15%);CIAR(5%)					
Oct. 1	1e	Polygon	Chann./Overbank	SAEX(75%);CANE(20%);JUBA(5%)	1.00, 1.00	Sat. in upper 12"	Not Det.	PSSC	0.17
	1f	Polygon	Channel	JUBA(40%);CANE(30%);TYLA(10%);	1.50, 1.40	Surface sat.	Not Det.	PEMB	0.01
				CAPR(20%)					
	1g	Polygon	Chann./Overbank	SAEX(40%);JUBA(30%);SAAM(5%);	1.89, 1.32	Surface dry	Not Det.	PSSC	0.06
				CANE(5%);PAVI(5%);PODE(5%);					
				SYOC(5%)					
	1h	Polygon	Chann./Overbank	JUBA(50%);CANE(25%);SCPA(10%);	1.00, 1.00	Surf. has algal	Not Det.	PEMC	0.01
				SAAM(5%)		growth, but is dry			
	1i	Polygon	Chann./Overbank	AMFR(40%);JUBA(30%);CANE(10%);	2.20, 1.47	Surface dry	Not Det.	PSSC	0.06
				CIAR(10%);SYOC(5%)					

SDM4	1j	Polygon	Chann./Overbank	CANE(35%);JUBA(25%);TYLA(5%);	1.40, 1.35	Sat. in upper 12"	Not Det.	PEMC	0.06
				LYAM(5%);ASSP(15%)					
	1k	Polygon	Chann./Overbank	SAEX(55%);JUBA(30%);AGSM(15%)	2.00, 1.45	Surface dry	Not Det.	PSSC	0.18
		Band							
Oct. 1	1l	Linear, 5'	Channel	JUBA(40%);CANE(15%);PAVI(10%);	2.40, 1.82	Surface dry	Not Det.	PEMC	0.02
		Band		POPR(10%);AGST(10%)					
Oct. 26									
	2a	Polygon	Channel	SURFACE WATER(90%);XAST(10%)	1.00, 1.00	Scour hole, 2-3'	Not Det.	R4SBC	0.01
						depth, with water			
	2b	Polygon	Channel	COBBLE(10%);PAVI(60%);BUDA(5%)	2.80, 2.75	Surface dry	Not Det.	PEMA	0.11
				GLLE(1%);PHCU(1%)					
	2c	Polygon	Channel/Banks	SAEX(80%);JUBA(5%);CANE(1%);	1.86, 1.11	Sat. in upper 12"	Not Det.	PSSC	0.06
				PAVI(3%);AGST(1%);MOSS(10%)					
				PODE(2%)					
	2d	Polygon	Channel	COBBLE(60%;SAND-SILT(40%)	1.00, 1.00	Sat. in upper 12"	Cobble	R4SBJ	0.01
	2ef	Polygon	Channel/Banks	AMFR(40%);SAEX(30%);COBBLE	1.81, 1.1	Sat. in Upper 12"	Cobble	PSSC	0.22
				(10%);MOSS(5%);CANE(5%);PAVI					
				(5%);PODE(1%);AGST(5%);LYAM(1%)					
				JUBA(1%);CIAR/SYOC(2%)					
	2g	Polygons	Channel/Banks	AMFR(80%);COBBLE(10%);PAVI(5%);	2.67, 1.43	Surface dry	Cobble	PSSA	0.27
		(3, varied width)		JUBA)2%);BAOR(3%);AGSM(5%);					
				ROAR(3%);AMPS(1%);VETH(2%)					
	2h	Polygon	Right Overbank	JUBA(40%);CIAR(15%);SOMI(5%);	3.63, 2.97	Surface dry	Not Det.	PEMA	0.14
				ASER(10%);BRTE(10%);ROAR(5%);					
				AGSM(30%);HYPE(2%)					
	2 i j	Linear	Channel, A Few	PODE (5%); COBBLE(70%); FINES	1.50, 1.12	Surface dry	Fines/Cobble	R4SBJ	0.004
			Cottonwoods	(5%); MOSS (3%)					
	2k	Polygon	Overbank, inside	JUBA(70%);CANE(10%);MEAR(2%);	1.50, 1.04	Sat. in upper 12"	Sandy loam,	PEMB	0.04
			2l	EPCI(2%);ELE1(10%);RUME(1%)			hummocky		
	2l	Polygon,	Right Overbank	JUBA(30%);ELE1(10%);TYLA(2%);	2.14, 2.18	Sat. in upper 12"	Not Det.	PEMC	0.27
			& Joins Channel	CAPR(10%);AMFR(2%);CIAR(20%);					

SDM4	2l (cont'd)			OEST(5%)					
Oct. 26	2m	Linear	Excavated ditch	COBBLE/FINES(30%);AMFR(10%);	2.88, 2.04	Surface dry	Cobble/fines	PEMA	0.04
			across natural	AGST(10%);PAVI(10%);POCO(5%);					
			meander	PLA1(5%);NECA(2%);PHPR(2%)					
	2no	Linear	Excavated Ditch	AMFR(40%);COBBLE (25%);PAVI	2.50, 1.74	Surface dry	Not Det.	PSSAx	0.01
			Across Natural	(5%);AGST(10%);RUME(5%);					
			Meander	AGSM(10%)					
	2p	Point	Scour Hole	FINES(60%);JUBA(10%):JUTO(10%)	1.00, 1.00	Surface dry	Not Det.	R4SBC	0.003
			in Channel						
	2q	Linear	Nat. Channel	AMFR(80%);AGSM(10%);ARLU(10%)	3.00, 1.60	Surface dry	Not Det.	PSSA	0.01
	2r	Polygon	Right Overbank-	AMFR(60%)AGSM(20%);CIAR(10%);	2.80, 2.05	Surface dry	Not Det.	PSSA	0.04
			Natural Chann.	NECA(5%);JUBA(5%)					
	2s	Polygon	Right Overbank,	JUBA(70%);CIAR(10%);SYOC(5%);	3.40, 1.79	Surface dry	Not Det.	PEMA	0.06
			Between Ditch &	ROAR(5%);SOMI(5%)					
			Nat. Channel						
	2t	Linear	Channeled Ditch	AMFR(30%);UPL GRASS(20%);	2.00, 1.67	Surface dry	Not Det.	PSSAx	0.01
				COBBLE (40%)					
	2u	Linear	Channeled	ELE1(10%);AGST(30%);PODE(5%);	1.88, 2.24	Surface dry	Not Det.	PEMCx	0.03
			Mainstem	AMFR(5%);JUBA(2%);MOSS(5%);					
				TYLA(1%);BRIN(1%)					
	2v	Polygon	Chann./Overbank	AMFR(70%);CIAR(30%);JUBA(10%);	2.13, 1.84	Surface dry	Not Det.	PSSC	0.29
				CANE(5%);PODE(5%);EPCI(2%);					
				PHAR(2%);NECA(2%);					
	2w	Polygon	Chann./Overbank	AMFR(30%);SAEX(5%);PODE(5%);	2.25, 1.93	Surface dry	Not Det.	PSSA	0.38
				JUBA(20%);PAVI(5%);SAAM(1%);					
				CIAR(10%);POCO(10%);					
	2x	Polygon	Channel/Banks	AMFR(60%);JUBA(20%);CIAR(10%);	2.25, 1.42	Surface dry	Not Det.	PSSA	0.07
				SOGI(5%)					
	2y	Polygon	Channel	TYLA(100%);	1.00, 1.00	Surface sat.	Surface soil	PEMB	0.01
							mottled		
	3a	Polygon	Channel/Banks;	AMFR(80%);SAAM(5%);AGST(5%);	2.17, 1.45	Surface dry	Not Det.	PSSA	0.1
			Crosses Road	CIAR(10%);PAVI(5%);JUBA(1%)					

SDM4	3b	Polygon	Channel	COBBLE(20%);JUBA(10%);AMFR(15%)	2.90, 2.23	Surface dry	Not Det.	PEMA	0.11
				AGST(10%);SYOC(5%);ROAR(2%);					
Oct. 26				NECA(2%);POCO(5%);GLLE(2%)					
				PAVI(20%)					
	3c	Polygon	Channel/Banks	AMFR(40%);PAVI(20%);COBBLE(10%);	2.67, 2.06	Surface dry	Not Det.	PSSA	0.02
				AMPS(5%);AGSM(10%);GLLE(5%)					
	3d	Polygon	Left Overbank	JUBA(80%);BRTE(10%);POCO(10%);	3.40, 1.76	Surf. moist	No mottling	PEMA	0.01
				CIAR(5%);AGSM(2%)		to 16"	to 16"		
	3e	Polygon	Left Overbank,	See 3 d	3.40, 1.76	Surf moist only to	No mottling	PEMA	0.01
			Below Road			22"	to 22"		
	3f, joins	Polygon	Channel/Banks	AMFR(70%);PAVI(10%);JUBA(5%);	2.38, 1.51	Surface dry	Not Det.	PSSA	0.05
	2g ds. to Woman Cr.			MEAR(1%);COBBLE(5%);CIAR(5%);					
				NECA(2%);AMPS(5%)					
	3g	Polygon	Old Channel, Ad-	AMFR(60%);JUBA(10%);AGSM(10%);	2.80, 1.79	Surface dry	Not Det.	PSSA	0.04
			jacent to Main Ch.	CIAR(10%);SYOC(5%)					
	3h	Polygon,	Left Overbank	JUBA(60%);AMFR(10%);CAPR(5%);	2.83, 1.78	Surface dry	Not Det.	PEMA	0.03
				AGSM(10%);CIAR(10%);GLLE(2%)					
	3i	Polygon	Left Overbank	AMFR(25%);JUBA35%);CIAR(15%);	2.80, 1.88	Surface dry	Not Det.	PEMA	0.02
				AGSM(10%);HYPE(5%)					
	3 i i	Polygon	NE Aspect, Lower	JUBA(40%);CANE(25%);TYLA(10%)	1.43, 1.03	Surface sat.	Not Det.	PEMB	0.03
			Slope	EPCI/LYAM(10%)ELE1(5%);SCAM					
				(2%);CIAR(1%)					
	3j	Polygon,	NE Aspect, Lower	JUBA(40%);CANE(10%);HOJU(10%);	2.46, 1.76	Surface moist	Mottles/ch.	PEMC	0.56
		Around 3 ii	Slope	TYAN(5%);RUME(1%);SCAM(1%);			ferrans in		
				PLA1(1%);JUIN(1%);AGSM(5%);			upper 6"		
				CIAR(2%);AGST(10%)					
	3k	Polygon	NE Aspect, Mid	ELE1(30%);AGST(20%);JUIN(10%);	2.60, 2.18	Surface moist	Mottles in	PEMC	0.1
			Slope, Goes Up-	JUTO(5%);CABR(2%);HOJU(5%);			upper 6"		
			Slope from 3 j	RUME(5%); FEAR(2%);POCO(5%)					
				TYAN(5%)					
	3m	Polygon	Outlet of 3ii&3k,	AGSM(90%);trace of LYAM/MEAR/	4.00, 4.00	Surface moist	Ferrules on	PEMA	0.07
			Mid Slope Swale	EPCI			roots of AGSM		

SDM5	1a	Linear	Upst. End of Ditch	SAEX(30%);PODE(30%);CANE(20%);	1.33, 1.63	Flowing water,	Not Det.	PSSCx	0.02
(irrig.ditch)			at mainstem	SCPA(5%);JUBA(5%);COBBLE(5%)		1-3" deep			
runs to									
D-1	1b	Linear	Joins 1a, ends at	CANE(40%);JUBA(20%);SCPA(10%);	1.33, 1.19	Flowing water,	Not Det.	PEMBx	0.05
Pond			Culvert	AGST(10%);COBBLE(5%);OBLIGATE		1-3" deep			
				FORBS(10%)					
Oct. 26	1c	Linear	From Culvert	CANE(50%);SCPA(5%);JUBA(5%);	1.25, 1.25	Surface sat.	Not Det.	PEMBx	0.14
			in Road Downstr.	TYAN(4%);LYAM(1%);AGST(10%);					
				XAST(1%);FINES(5%)					
	1d	Linear	Joins 1c, and	CANE(5%);JUBA(10%);AGST(20%);	1.50, 1.77	Surface water	Not Det.	PEMCx	0.17
			Ditch Deepens	SCPA(5%);PODE(5%);TYAN(5%);					
				COBBLE(5%);OPEN WATER(5%)					
	1e	Linear	Joins Main Ditch	TYAN(70%);CANE(20%);CIAR(5%);	1.50, 1.19	Surface sat.	Not Det.	PEMC	0.006
				ELE1(5%);CAEM(5%);OBLIGATE					
				FORBS(5%)					
	1ee	Polygon	Seep from 1d	CANE(50%);EPCI(10%);ELE1(10%);	2.0, 2.02	Surf. sat in upper	Not Det.	PEMC	0.04
				RUME(2%);CIAR(35%)		12"			
	1f	Polygon	Downslope Area	JUBA(70%);CANE(10%);CIAR(5%);	2.00, 1.26	Surface dry	Not Det.	PEMA	0.24
			Along Ditch	ELE1(5%);CAR1(5%)					
	1h	Polygon	Joins Headgate	CANE/CAEM(60%);JUBA(10%);	1.83, 1.49	Sat. in upper 12"	Not Det.	PEMCx	0.02
			in Ditch to D-1	SCPA(5%);EPCI/MEAR(5%); RUME					
			Pond	(1%);CIAR(15%)					
	4aa	Polygon	D-1 Pool	OPEN WATER	1.00, 1.00	Standing water	Not Det.	L1UBH	3.18
	4a	Polygon	Lower Veg. Zone	TYAN(70%);SCVA(10%);MOSS(20%)	1,00, 1.00	Surface sat.	Not Det.	PEMFh	0.17
			Above Mudlfat-4d						
	4b	Polygon	Upper Veg. Zone	TYAN(40%);ELE1(25%);SCVA(2%);	2.17, 1.72	Sat. in upper 12"	Not Det.	PEMCh	0.24
			of Pond	PODE(1%);HOJU(1%)					
	4c	Polygon	Same as 4 a, but	See 4 a	See 4a	See 4a	Not Det.	PEMFh	0.31
			on Right Side						
	4d	Polygon	Pool Drawdown	MUDFLAT(70'%);ANNUALS(30%)	1.00, 1.00	Seasonally	Not Det.	PUSCh	0.05
			Zone			ponded water			
	4e	Polygon	Upper Veg. Zone	See 4 b	See 4b	See 4b	Not Det.	PEMCh	0.76

SDM5									
	4f	Polygon	Drainage into Up-	CAR1(20%);HOJU(10%);MUAS(10%);	2.50, 2.95	Surface dry	Not Det.	PEMA	0.29
Oct. 26			stream End of	CANE(2%);POMO(2%);AGST(5%);					
			D-1 Pond	CIAR(5%);EPCI(1%);AGSM/AGCA(20%)					
				RUME(2%)					
	4g	Polygon	Riprap Near Left	COBBLE/GVL (100%)	1.00, 1.00	Drawdown Zone,	Not Det.	PUSCr	0.23
			Abutment			Riprap			
	5a	Polygon	Seep Below D-1	TYLA(45%);TYAN(40%);CIAR(5%);	1.60, 1.15	Standing water,	Not Det.	PEMB	0.58
			Dam	JUBA(5%);SCAM(3%)		1-2" deep			
	5b	Linear	Seep Below D-1	TYLA(45%);TYAN(45%);EPCI(5%)	1.00, 1.00	Standing water,	Not Det.	PEMB	0.02
			Dam			1-2" deep			
	5c	Linear	Seep Below D-1	SCAM(25%);CANE(60%);TYAN(2%);	1.50, 1.04	Surface Sat.	Not Det.	PEMC	0.007
			Dam	AMPS(2%)					
	5d	Polygon	Dam Seepage	TYLA(30%);TYAN(30%);JUBA(5%);	1.83, 1.88	Sat in upper 12"	Mottling in	PEMC	0.2
				CANE(5%);RUME(1%);CIAR(20%)			upper 7-8"		
	5e	Polygon	Dam Seepage	TYAN(65%);ELE1(3%);EPCI(10%);	1.60, 1.32	Sat. in upper 12"	Mottling in	PEMB	0.12
				CANE5%);CIAR(10%)			upper 3-4"		
	5f	Polygon	Dam Seepage	ELE1(50%);CANE20%);CAPR(5%);	2.60, 1.74	Surface some-	Not Det.	PEMC	0.44
				FEAR(5%);CIAR(10%);LASE(5%);		what hummocky			
				SCPA(2%);HOJU(1%);RUME(2%)					
				ATR1(1%)					
	5g	Polygon	Downstream	ELE1(40%);ATR1(10%);CANE12%);	2.13, 1.85	Surface dry	Not Det.	PEMA	0.08
			Channel	CIAR(10%);RUME(5%);JUBA(1%);					
				CAPR(5%);HOJU(1%)					
	5h	Linear	Downstream	ELE1(50%);FEAR(30%);HOJU(5%);	3.00, 2.20	Surface dry	Not Det.	PEMA	0.02
			Channel to Pool	GLLE(1%)					
	5i	Polygon	Lower Pool Fluct.	ELE1(60%);TYAN(25%);RUME(2%);	1.50, 1.04	Sat. in upper 12";	Not Det.	PEMCh	0.73
			Zone of D-2	JUBA(2%)		water marks			
	5ii	Polygon	D-2 Pool Zone	OPEN WATER /MUDFLAT(90%);	1.00, 1.00	Standing water,	Not Det.	PUBFh	6.05
				FLOATING ALGAE(10%)		3-4 ' depth			
	5j	Polygon	Mid Pool Fluct.	SAEX(85%);ELE1(15%);HOJU(2%)	1.67, 1.04	Drift Lines/water	Not Det.	PSSCh	0.06
			Zone of D-2			marks			

SDM5	5k	Polygon	Upper Pool Fluct.	CIAR(25%);JUBA(5%);RUME(5%);	3.14, 3.64	Bank erosion/	Not Det.	PEMAh	1.53
			Zone	HOJU(1%);BRTE(30%);LASE(10%);		scarps			
Oct. 26				BRIN(10%)					
	5l	Polygon	Lower Pool Fluct.	TYLA(40%);TYAN(10%);ELE1(40%);	1.80, 1.09	Sat. in upper 12";	Not Det.	PEMCh	0.05
			Zone	RUME(2%);HOJU(2%)		water marks			
	5m	Polygon	Upper Pool Fluct.	HOJU(75%);BRIN(5%);BRTE(15%)	3.67, 2.42	Water marks	Not Det.	PEMAh	0.02
			Zone--near fence						
	5n	Point	Seep Below D-2	TYLA(20%);EPCI(10%);RUME(5%);	2.17, 2.16	Iron-stained	Not Det.	PEMB	0.003
			Dam	ATR1(20%);CIAR(20%);CANE(20%)		surface water			
	5o	Linear	Seep Extension	FEAR(30%);LASE(15%);RUME(5%);	2.40, 2.30	Channel ds. of	Not Det.	PEMC	0.01
			Below D-2 Dam	TYLA(15%);ELE1(35%)		D-2 dam			
	5p	Polygon	Seep Extension	JUTO(10%);JUBA(2%);EPCI(5%);	2.00, 1.45	Channel ds. of	Mottling in	PEMC	0.12
			Below D-2 Dam	TYAN(3%);RUME(5%);CANE(3%);		D2	upper 6"		
				MUAS(2%);AGST(3%);HEAN(3%)					
				NECA(2%);CAEM(10%);ELE1(30%)					
	5q	Polygon	Seep Extension	CIAR(35%);VEHA(25%);ASSP(5%);	2.25, 2.77	Seepage zone	Not Det.	PEMA	0.1
			Below D-2 Dam	POMO(10%);ATR1(5%);JUBA(3%)		below D2			
				CACA(2%);RUME(3%)					
	5r	Polygon	Widened Area	TYAN(20%);POMO(20%);ELE1(50%);	2.00, 1.33	Sat. in upper 12"	Not Det.	PEMC	0.07
			of Channel	RUME(10%);FEAR(5%)					
	5s	Polygon	Channel area, S	JUBA(60%);FEAR(30%)	2.50, 2.00	Surface dry	Mottling in	PEMA	0.01
			of Swale				upper 6"		
	5t	Polygon	Widened Channel	HOJU(60%);ELE1(10%);FEAR(15%);	1.75, 2.68	Ponded water 1-2	Not Det.	PEMC	0.05
			Area Near Indiana	SCAM(2%);PHAR(5%);TYAN(5%);		inches depth be-			
			Street	EPCI(2%);OPEN WATER(2%)		cause of road			

APPENDIX E

WETLAND INVENTORY

WALNUT CREEK DRAINAGE

			WALNUT CREEK DRAINAGE, INCLUDING ROCKY FLATS PLANT 1/						
Drain. Basin	Wetl. No.	Feature	Geomorphology	Vegetative Composition & Cover (%)	Hydroph. Status	Hydrologic Indicator	Soils Indicator	Wetl. Type	Acres
Plant √	1a	Polygon	SE Aspect, Lower	TYLA(9%);CIAR(5%);ELE1(1%)	2.00, 1.09	Surface Water,	Not Det.	PEMB	0.06
Site/			Slope			1-2" deep			
Protec√	1b	Polygon	SE Aspect, Lower	JUBA(70%);JUIN(3%);AGST(10%);	2.80, 1.63	Sat. in upper 12"	Not Det.	PEMC	0.07
Area			Slope	PODE(2%)					
√	1c	Linear	Drainage Chann.	TYLA(20%);OPEN WATER/COBBLE	1.33 1.11	Channel, Flowing	Not Det.	PEMBx	0.06
Oct. 30			in SW121 area	(40%);PODE(5%);JUBA(10%);		Water			
				NAOF(5%);SCAM(5%)					
SNOW									
COVER √	1d	Linear	E. Aspect, Drain-	TYLA(50%);JUTO(20%);AGST(20%)	1.67, 1.44	Sat. in upper12"	Not Det.	PEMCx	0.01
			age Ditch						
√	1e	Linear	E. Aspect, Drain-	TYLA(40%);ELE1(40%);JUBA(15%);	1.50, 1.10	Standing Water,	Not Det.	PEMCx	0.031
			age Ditch, SW56	AGST(5%)		2" depth			
√	1f	Polygons	E. Aspect, Drain-	TYAN;/TYGL(90%);JUTO(5%);	1.00, 1.00	Standing Water,	Not Det.	PEMBX	0.05
			age Ditch	ELE1(5%)		2-3" depth			
√	1g	Polygon	Seep from Solar	TYLA(90%);JUTO(10%)	1.00, 1.00	Surface Sat.	Not Det.	PEMB	0.02
			Pond, IHSS area						
√	1h	Polygon,	Upper End of N.	See 1g	1.00, 1.00	Surface Sat.	Not Det.	PEMB	0.06
			Interceptor Ditch						
√	1i	Polygon,	Upper End of N.	OPEN WATER(90%);TYLA(10%)	1.00, 1.00	Surface Water,	Not Det.	PUBF	0.005
		SW84	Interceptor Ditch			1-2' depth			
√	1j,1k	j=polygon	Drainage Ditch	TYLA(70%);SAEX(10%);PODE(5%);	2.00, 1.18	Surface Sat.	Not Det.	PEMBx	0.19
		k=point		ELAN(2%)					
√	1l	Polygon	Ditch Between Sub	ELAN(70%);TYLA(5%);PODE(5%);	2.00, 2.50	Sat. in upper 12"	Not Det.	PEMCx	0.05
			Station & Cutbank	JUBA(20%)					
√	1m	Polygons	N. Aspect, on	TYLA(100%)	1.00, 1.00	Sat. in upper 12"	Not Det.	PEMB	0.007
			Hillside						
	1n	Polygon	L-shaped, IHSS	TYGL(100%)	1.00, 1.00	Sat. in upper 12"	Not Det.	PEMB	0.021
			zone						

1/ For natural "slope" wetlands, special hydrology (surface seepage) is indicated by an asterisk (*) inserted in the wetland number column. Special wetland types created or modified by impoundment (h), excavation (x), ditching (d) or artificial substrate (r) are shown in the wetland type column.

WCM1	1a	Polygon	Chann./Overbank	JUBA(95%);AGCA(5%);NECA(1%)	3.00, 1.19	Surface Dry	Not Det.	PEMA	0.01
Upst.									
main	1b	Polygon	Upper Channel	AMFR(40%);AGST(5%);COBBLE/	2.13, 1.59	Surface Dry	Not Det.	PSSA	0.2
N-S				GVL(20%);POCO(10%);AMPS(5%);					
road				JUIN(1%);CANE(2%);JUBA(5%)					
Oct. 28									
	1c	Linear	Upper Channel	AMFR(30%);AGST(5%);POCO(20%);	2.40, 1.80	Surface Dry	Not Det.	PSSA	0.02
				PAVI(5%);COBBLE/GVL(40%)					
	1cc	Point	Upper Channel	JUBA(100%)	1.00, 1.00	Surface Dry	Not Det.	PEMA	0.002
	1d	Polygon	Upper Channel	PODE/AMFR(30%);COBBLE (70%)	1.67, 1.30	Surface Dry	Not Det.	PSSA	0.03
			to Culvert						
	1e	Linear	Upper Channel,	PODE(40%);SAEX(10%);AMFR(20%);	1.50, 1.80	Surface Dry	Not Det.	PSSA	0.02
			ds Quarry	COBBLE/GVL(30%)					
	1f	Polygon	Upper Channel,	COBBLE/GVL(80%);PODE(5%);	2.00, 1.13	Surface Dry	Not Det.	R4SBJ	0.1
			ds Quarry	PLLA(1%);AMFR(4%)					
	1g, 1h	Linear	Upper Channel,	See 1 f	See 1f	See 1f	Not Det.	R4SBJ	0.9
			ds Quarry						
	1	Polygon	Upper Channel,	AMFR(30%);AGST(5%);JUIN(5%);	2.50, 1.66	Surface Dry	Not Det.	PSSA	0.08
			ds Quarry	PLLA(2%);AGSM(10%);COBBLE(30%)					
	1 j	Linear	Upper Channel,	See 1f	See 1f	See 1f	Not Det.	R4SBJ	0.02
			ds Quarry						
	1k	Point	Bank Between	JUBA(90%);NECA(1%);CIAR(5%);	3.00, 1.21	Surface Dry	Not Det.	PEMA	0.004
			Church/McKay	UNCONS. BOTTOM (3%)					
			Ditches						
	1l	Polygon	Upper Church	AMFR(30%);PODE(2%);AGST(10%);	2.20, 1.39	Surface Dry	Not Det.	PSSAx	0.015
			Ditch	PLLA(5%);COBBLE/GVL(40%)					
	1m,1n	Polygons	Overbank Areas	JUBA(70%);BAOR(10%);AGRE(10%);	2.40, 1.60	Surface Dry	Not Det.	PEMA	0.05
				AMFR(5%);CIAR(10%)					
	1o	Point	Overbank Area	CANE(85%);AMPS(5%);BAOR(5%);	2,50, 1.25	Surface Dry	Not Det.	PEMA	0.003
				RUME(2%)					
	1p	Point	Right Overbank	JUBA(50%);AMFR(10%);ORBA(5%);	2.67, 1.50	Surface Dry	Not. Det.	PEMAx	0.01
			Church Ditch	CIAR(5%);AGST(1%);POT2(5%)					

WCM1	1q	Polygon	Channel, Upper	AMFR(40%);PAVI(5%);PLLA(3%);	2.38, 1.70	Surface Dry	Not Det.	PSSAx	0.02
			Church Ditch	COBBLE/GVL(1%);AGST(5%);					
Oct. 28				AGSC(5%);PHPR(5%);POT2(3%)					
(pm)	1 r	Polygon	Chann., Upper	See 1q	See 1q	See 1q	Not Det.	PSSAx	0.06
			Church Ditch						
Fence	2a	Polygon	Chann./Overbank	AMFR(30%);COBBLE(5%);PAVI(5%);	2.83, 2.30	Channel, Surf Dry	Not Det.	PSSA	0.05
West			Up. Church Ditch	ARFR(5%);OPU1(10%);AGSM(10%)					
of N-S									
road	2b	Linear	Channel	COBBLE Dominant	1.00, 1.00	Channel, Surf. Dry	Not Det.	R4SBJ	0.01
East of	2c	Point	Chann./Overbank	AMFR(70%);NECA(5%);PAVI(5%);	2.25, 1.20	Channel, Surf. Dry	Not Det.	PSSA	0.005
N-S				COBBLE((20%)					
road	2d	Linear	Channel	Same as 2c, but Cobble Dominant	2.25, 1.20	Channel, Surf. dry	Not Det.	R4SBJ	0.06
				Instead of AMFR					
	2e	Polygon	Chann./Overbank	AMFR(50%);CANE(10%);COBBLE/	2.17, 1.41	Channel, Surf dry	Not Det.	PSSC	0.14
SNOW				GRAVEL(10%);SYOC(5%);SPPE(5%)					
FALL				CIAR(5%)					
	2f, 2g	Polygons	Overbank	SPPE(80%);BAOR(5%);RUB1(10%);	2.71, 2.30	Channel, Surf. dry	Not Det.	PEMA	0.14
				CIAR(5%);JUBA(5%);CANE(2%);					
				HYPE(2%)					
	2h	Linear	Channel	COBBLE/GRAVEL Dominant	1.00, 1.00	Channel, Surf dry	Not Det.	R4SBJ	0.03
	2i	Polygon	Right Overbank	SAEX(100%)	1.00, 1.00	Channel, Surf dry	Not Det.	PSSA	0.01
SNOW									
COVER	2j	Linear	Chann., Upstream	COBBLE/GVL (75%);UPL. VEG(20%)	2.50, 1.63	Channel, Surf. dry	Not Det.	R4SBJ	0.03
Oct. 30			of Diversion Dam						
	2k	Polygon	Depression near	TYLA(60%);SAAM(15%);LYAM(10%);	1.20, 1.05	Surface Sat.	Not Det.	PEMB	0.04
			Channel	PHAR(5%);JUBA(10%)					
	2l	Linear	Channel, just	SAEX(30%);AMFR(20%);TYLA(10%);	1.00, 1.00	Surface Dry	Not Det.	PSSA	0.01
			Upstream of dam	COBBLE/GVL(40%)					
WCM2									
Oct. 29	3b	Polygon	C-30 Culvert	TYLA(80%);JUTO(10%);OPEN	1.00, 1.00	Standing Water	Not Det.	PEMBh	0.02
Div.			Backwater	WATER/FINES(10%)					
Dam									
to	3c	Polygon,	C-30 Culvert to	TYLA(80%);JUTO(10%);ELE1(10%)	1.00, 1.00	Standing Water	Not Det.	PEMB	0.13
Down-			SW098						

stream											
Areas	3d	Polygon,	DS. of SW098 to	OPEN WATER(90%);TYLA(9%);	1.00,	1.00	Standing Water	Not Det.	PUBF	0.25	
WCM2			bend in ditch	SAEX(1%)							
SNOW	3e	Polygon,	SE of Diversion	PODE(60%);SAAM(30%);TYLA(5%);	1.50,	2.14	Sat./Standing	Not Det.	PSSC	0.01	
COVER			Dam	OPEN WATER(10%)			Water				
29-Oct	3f	Polygon	Upstream Face-	PODE(70%);SAAM(10%);BOULDER/	1.67,	2.40	Surface Sat.	Not Det.	PSSC	0.06	
			Diversion Dam	COBBLE (20%)							
	3g	Polygon	Open Water upst.	OPEN WATER(100%)	1.00,	1.00	Standing Water,	Not Det.	PUBHh	0.14	
			of Dam Face				2-3 feet depth				
	3h	Linear	Downstream of	PODE(40%);SAAM(10%);AMFR(40%)	1.67,	1.89	Surface Sat.	Not Det.	PSSC	0.02	
			Diversion dam								
	3i	Polygon	Left Flank of	TYLA(70%);AMFR(20%);SAAM(5%);	1.00,	1.00	Standing Water	Not Det.	PEMBh	0.03	
			Diversion Dam	OPEN WATER (5%)							
	3 m	Polygon	S. Aspect, Upper	TYLA(70%);BAOR(10%);JUBA(10%);	2.00,	1.35	Surface Sat.	Not Det.	PEMB	0.12	
			Slope	SCPA(5%);CIAR(5%)							
	3n	Polygon	S. Aspect, Lower	JUBA(50%);CAPR(20%);JUIN(5%);	3.17,	2.16	Surface Dry	Not Det.	PEMC	0.06	
			Slope	POCO(10%);PHPR(5%);CIAR(5%)							
	3 o	Polygon	S. Aspect, Upper	TYLA(70%);JUBA(15%);SAEX(5%);	1.29,	1.02	Surface Sat.	Not Det.	PEMB	0.27	
			Slope	ELE1(10%);JUTO(5%);PODE(1%);							
				SAAM(1%)							
	3p,q	Polygons	S. Aspect, Lower	JUBA(60%);JUTO(10%);CAPR(10%);	1.50,	1.24	Sat. in upper 12"	Not Det.	PEMC	0.04	
			Slope	SCPA(5%)							
✓	4a	Polygons	Ditch, Along Outer	TYLA(90%);JUTO(7%);SAEX(2%);	1.57,	1.06	Standing Water,	Not Det.	PEMBx	0.75	
			Road,5 Weirs & 6	OPEN WATER(1%);PODE(1%)			Surface Sat.				
			Seg./Scour Holes	ELAN(1%) JUBA(2%)							
✓											
Oct. 30	5a	Polygon	Sage Avenue,	TYLA(80%);SAEX(5%);SCVA(5%);	1.00,	1.00	Surface Sat.	Not Det.	PEMBx	0.14	
			Along Ditch	OPEN WATER(5%)							
✓	5b	Polygon	Drainage ditch	JUBA(30%);CANE(10%);JUIN(10%);	2.50,	2.43	Periodic Surface	Not Det.	PEMAx	0.06	
			along RR track	BAOR(5%);RUME(2%);AGSM(30%)			Water Drainage				

WCM2	6a	Point	Below Diversion	SAL1(100%)	1.00, 1.00	Dam Seep Area	Not Det.	PSSC	0.003
Oct. 30			Dam						
	6b	Linear	Channel	SAL1(20%);PODE(20%);AMFR(20%);	2.25, 2.20	Channel-Surf. dry	Not Det.	PSSA	0.006
SNOW				UPLAND (40%)					
COVER	6c	Polygon	Channel	SAL1(60%);TYLA(40%)	1.00, 1.00	Channel-Surf dry	Not Det.	PSSC	0.03
Ds. of									
Div.	6d	Polygon	Chann./Overbank	AMFR(50%);JUBA(20%);BAOR(10%);	1.86, 1.38	Channel-Surf dry	Not Det.	PSSC	0.14
Dam			By Big Chute Outl.	SPPE(5%);CANE(5%);SAEX(10%);					
				CIAR(5%)					
	6e	Polygon	Left Overbank	JUBA(40%);CAPR(30%);SPPE(20%);	2.83, 2.18	Surface Dry	Not Det.	PEMA	0.03
				BAOR(5%);HYPE(2%);CIAR(10%)					
	6f*	Polygon	S. Aspect, Mid	TYLA(90%);CANE(3%);BAOR(5%);	1.40, 1.09	Surface Sat.	Not Det.	PEMB	0.15
			Slope	LEMI(1%);OPEN WATER(2%)					
	6g	Polygon	S. Aspect, Lower	CANE(75%);JUBA(5%);PAVI(5%);	2.67, 1.57	Sat. in upper 12"	Not Det.	PEMC	0.12
			Slope	AGST(10%);CIAR(5%);PHPR(5%)					
	6h	Polygon	Chann./Overbank	AMFR(80%);BAOR(8%);JUBA(10%);	1.75, 1.18	Channel, Surf dry	Not Det.	PSSC	0.08
				SPPE(2%)					
	6i	Polygon	Chann./Overbank	TYLA(70%);JUBA(10%);AMFR(10%);	1.50, 1.11	Surface Sat.	Not Det.	PEMB	0.12
				BAOR(5%)					
	6j	Linear	Left Overbank,	JUBA(80%);CIAR(20%)	2.50, 1.60	Surface Dry	Not Det.	PEMA	0.03
SNOW	6k	Polygon	Chann./Overbank	AMFR(60%);SAEX(20%);TYLA(5%);	1.88, 1.21	Channel, Flowing	Not Det.	PSSC	0.21
MELT				CANE(5%);MOFI(2%);SYOC(5%)		Water			
				BAOR(1%);COBBLE(2%)					
	6l	Linear	Left Overbank	JUBA(60%);CIAR(10%);PAVI(10%);	3.43, 1.99	Surface Dry	Not Det.	PEMA	0.04
			adj to 6k	JUIN(2%);GEAL(2%);CAPR(5%);					
				AGSM(10%)					
	6m	Polygon	S. Aspect, Upper	JUBA(60%);BAOR(5%);EPCI(5%);	2.78, 1.99	Hummocky	Not Det.	PEMC	0.05
			Slope	CAPR(5%);JUIN(2%);PAVI(10%);					
				CIAR(10%);GEAL(2%);AGSM(10%)					
	6n	Polygon	S. Aspect, Upper	SPPE(20%);JUBa(40%);PAVI(10%);	3.00, 2.20	Surf. Dry	Not Det.	PEMA	0.06
			Slope	GEAL(5%);CIAR(10%);HYPE(2%);					
				POCO(10%)					
	6o	Polygon	Chann./Overbank	AMFR(70%);SAEX(10%);CANE(2%);	1.57, 1.14	Surface Water	Not Det.	PSSC	0.11

WCM2	(6o cont'd)			TYLA(5%);BAOR(5%);JUBA(3%);		in Channel			
				PODE(2%)					
Oct. 30	6p* &	Points	Right Overbank	TYLA(80%);BAOR(5%);JUBA(15%)	1.67, 1.10	Surface Water	Not Det.	PEMB	0.006
	6q*								
	6r	Polygon	Chann./Overbank	JUBA(60%);BAOR(5%);SPPE(5%);	2.57, 1.66	Surface Dry	Not Det.	PEMA	0.12
SNOW			To Road Cross.	AMPS(5%);CANE(2%);CAFA(1%)					
MELT									
	6s	Polygon	Chann./Overbank	AMFR(50%);JUBA(20%);CANE(20%);	1.29, 1.04	Surface Water,	Not Det.	PSSC	0.1
				TYLA(5%);PODE(2%);SAEX(5%);		6-12"			
				OPEN WATER(2%)					
	6t	Polygon	S. Aspect, Lower	JUBA(60%);SPPE(10%);CANE(10%);	2.57, 1.79	Surface Dry	Not Det.	PEMA	0.12
			Slope	BAOR(5%);CIAR(10%);GLLE(10%);					
				GEAL(2%)					
	6u,6w	Polygons,	Mid Slopes, S.	SAEX(80%);BAOR(5%);TYLA(2%);	2.40, 1.36	6u-Surf. Dry	Not Det.	PSSC	0.56
			and N. Aspects	PODE(5%);CIAR(5%)		6w-Stream Flow			
	6v	Polygon	N. Aspect, Mid	TYLA(40%);JUBA(30%);BAOR(20%);	2.25, 1.58	Surf. Hummocky	Not Det.	PEMC	0.06
			Slope	CIAR(5%)					
	6x	Linear,	N. Aspect, Mid to	JUBA(40%);BAOR(10%);CIAR(30%);	3.00, 2.47	Surface Dry	Not Det.	PEMA	0.31
			Lower Slope	HYPE(5%)					
	6y	Polygon	Channel	TYLA(90%);OPEN WATER(5%);	1.00, 1.00	Standing Water	Not Det.	PEMB	0.07
				LEMI(5%)					
	6z	Polygon	S. Aspect. Mid	JUBA(50%);BAOR(10%);CIAR(10%)	2.25, 1.63	Surface Dry	Not Det.	PEMC	0.02
			Slope	TYLA(10%)					
	6zzz	Polygon	Ditch Ends at	AMFR(50%);PODE(10%);SAEX(5%);	2.00, 1.53	Periodic Standing	Not Det.	PSSCh	0.19
			5" Tube:Backup	SPPE(5%);OPEN WATER(5%);		Water			
				BAOR(5%);COBBLE(5%);SYOC					
				(5%);TYLA(5%)					
WCM3									
Oct. 31	1a	Polygon	At 5'Culvert Out-	PODE(60%);SAEX(30%);CIAR(5%);	2.60, 2.49	Channel, flowing	Not Det.	PSSA	0.02
Below			let ds. of Fence	TYLA(1%);PHPR(5%)		water			
Parking									
Lot	1b	Polygons	Channel, two	COBBLE(40%);SAEX(30%);PODE	1.29, 1.19	Est. 1 cfs flow,	Not Det.	PSSC	0.22
by			segments	(10%);MOSS(10%);NAOF(1%);		depth 6"-1'			
Sec.				TYLA(5%);CANE(5%)					
Fence									

WCM3	1c	Polygon	Right Overbank	SAEX(50%);SYOC(20%);CIAR(20%);	3.2, 2.39	Channel, flowing	Not Det.	PSSA	0.23
Downst.				ARMI(2%);SOGI(3%)		water			
through									
A-ser.	1d,1g	Polygons	Chann./Overbank	PODE(60%);SAEX/SAAM(10%);	2.0, 2.50	Flowing Water	Not Det.	PFOC	0.17
Ponds				CANE(10%);BRIN(10%);COBB.(10%)					
Oct. 31	1e, 1h	Polygons	Chann./Overbank	SAAM(50%);SYOC(20%);CIAR(20%);	3.2, 2.39	Channel, Flowing	Not Det.	PSSA	0.13
				ARMI(2%);SOGI(3%)		Water			
SNOW	1f	Polygon	Chann./Overbank	SAEX(50%);SAAM(10%);TYLA(10%);	2.00, 1.80	Flowing Water	Not Det.	PSSC	0.1
MELT				CIAR(20%);BAOR(10%)					
	1i	Polygon	Right Overbank	JUBA(40%);CANE(5%);BAOR(10%);	2.83, 2.47	Overflow Channel	Not Det.	PEMA	0.03
				CIAR(15%);SYOC(15%);AGSM(10%)					
	1j	Polygon	Chann./Overbank	SAEX(70%);CIAR(20%);SYOC(5%)	3.00, 1.79	Surface Water	Not Det.	PSSA	0.12
	1k	Polygon	Backwater from	TYLA(80%);SAEX(10%);NAOF(2%);	1.00, 1.00	Surface Water	Not Det.	PEMFh	0.28
			Weir	FINES(1%)					
	1l	Polygon	Backwater from	SAEX(80%);TYLA(10%);SAAM(10%)	1.00, 1.00	Surface Water	Not Det.	PSSCh	0.13
			Weir						
✓	1m	Linear	Dam outlet ditch	TYLA(95%);SCPA(5%)	1.00, 1.00	Surf. Saturated	Not Det.	PEMBx	0.007
			to A1 pond						
✓	1n	Polygon	Upper A-1 Pond	SAEX(50%);AGST(20%);JUBA(10%);	2.60, 2.00	Zone Below Spill-	Not Det.	PSSAh	0.52
			Fluct. Zone	SYOC(10%);CIAR(10%)		way Elevation			
✓	1o	Polygon	A-1 Pool Fluct.	POPE(50%);JUTO(5%);ECMU(10%);	1.29, 1.11	Some Bank	Not Det.	PEMCh	0.17
			Zone--Middle	SAEX(10%);TYLA(10%);RUME(5%);		Erosion			
				COBBLE(5%)					
✓	1oo	Polygon	Lower A-1 Pool	TYLA(100%)	1.00, 1.00	Pool zone	Not Det.	PEMFh	0.02
			Fluct. Zone						
✓	1ooo	Polygon,	A-1 Pool Surface	AQUATICS (60%)& OPEN WATER -40%	1.00, 1.00	Pool Depth About	Not Det.	PABHh	0.84
						3 ft.			
	1p	Polygon	N. Aspect, Slope	TYLA(35%);JUBA(30%);CANE(5%);	1.60, 1.60	Sat. in upper 12"	Not Det.	PEMC	0.07
			Drainage	SAAM(5%);CIAR(20%)					

WCM3									
Oct. 31	1pp	Polygon	Upper Pool Fluct	SAEX(80%);CIAR(15%);AGST(5%)	2.67, 1.55	Surface Dry	Not Det.	PSSAh	0.44
			Zone of A-2						
	1q	Polygon	Mid Pool Fluct.	SAEX(60%);JUBA(30%);TYLA(5%)	1.00, 1.00	In Pool Zone	Not Det.	PSSCh	0.47
SNOW			Zone of A-2						
MELT									
	1r	Polygon	A-2 Dam Outlet	TYLA(80%);CANE(15%)	1.00, 1.00	In Pool Zone	Not Det.	PEMBh	0.03
			to A-2 Pond						
	1t	Polygon	Lower Pool Fluct.	TYLA(95%);PODE(3%);SAEX(2%);	1.50, 1.06	Pool Zone	Not Det.	PEMFh	0.16
			Zone of A-2	SCVA(2%)					
	1v	Polygon	Right, Upper A-2	CIAR(60%);AGSM(20%);HOJU(10%);	3.50, 3.80	Splash or Wave	Not Det.	PEMAh	0.22
			Pool Fluct. zone	RUME(10%)		Runup			
	1w	Linear,	Right, Mid A-2	TYLA(20%);POPE(10%);ELE1(10%)	1.00, 1.00	Pool Zone At, or	Not Det.	PEMCh	0.19
			Pool Fluct. zone			Just Below Spill-			
						way			
	1x	Polygon	Open Pool Zone	OPEN WATER(100%)	1.00, 1.00	Depth>6.6 ft.	Not Det.	L1UBH	1.38
			of A-2						
	2a	Polygon	A-2 Dam Outlet	TYLA(95%)	1.00, 1.00	Flowing Water	Not Det.	PEMB	0.06
			Area						
	2b,	Polygon	Below A-2 Em-	SAEX(80%);SYOC(10%);CIAR(10%);	3.00, 1.67	Some Seepage	Not Det.	PSSCh	0.39
			bankment	BAOR(5%)		plus Backwater			
	2c	Polygon	Pool Fluctuation	ECMU(65%);RUME(15%);AGST(15%)	2.40, 1.65	Pool Zone	Not Det.	PEMCh	0.73
			Zone of A-3	GLLE(2%);FINES(5%)					
	2d	Polygon	Open Pool Zone	OPEN WATER	1.00, 1.00	Depth>6.6 ft	Not Det.	L1UBH	2.8
			of Pond A-3						
	3a	Polygon	A-3 Dam Outlet	SAEX(70%);TYLA(20%);BAOR(10%)	1.67, 1.20	Flowing Water	Not Det.	PSSC	0.02
	3b	Polygon	A-3 Dam Outlet	TYLA(80%);SAEX(5%);BAOR(10%);	1.50, 1.20	Flowing Water	Not Det.	PEMB	0.11
			Area	OPEN WATER(5%)					
	3c	Polygon	Below A-3 Dam,	SAEX(75%);TYLA(10%);JUBA(5%);	1.40, 1.04	Flowing Water	Not Det.	PSSC	0.08
			Joins 3b	BAOR(2%);CANE(2%)					

WCM3									
Oct. 31	3d	Linear	Channel, Below	SAEX(60%);AMFR(5%);CANE(20%);	1.60, 1.15	Flowing Water	Not Det.	PSSC	0.02
			A-3 Dam	JUBA(10%);AGSM(5%)					
SNOW									
MELT	3e	Linear	Channel, Below	CANE(60%);JUBA(20%);AMFR(10%);	1.00, 1.00	Flowing Water	Not Det.	PEMC	0.05
			A-3 Dam	COBBLE(10%)					
	3f	Polygon	Right Overbank	SAEX(100%)	1.00, 1.00	Flowing Water	Not Det.	PSSC	0.01
	3g	Polygon	Pool Fluctuation	FINES/COBBLE/ANNUAL DRAW-	1.00, 1.00	Pool Zone	Not Det.	PEMAh/	1.54
			Zone of A-4 Pond	DOWN VEG.				L1USG	
	3h	Polygon	A-4 Pool Zone	OPEN WATER (100%)	1.00, 1.00	Depth > 6.6 ft.	Not Det.	L1UBH	2.93
	4a	Polygon	Outlet Below A-4	TYLA(40%);CANE(10%);BAOR(2%);	1.75, 1.04	Seepage Water	Not Det.	PEMB	0.01
			Dam	COBBLE(2%)					
	4b	Polygon	Channel Below	JUBA(25%);CANE(15%);ECMU(15%);	1.62, 1.23	Seepage Water	Not Det.	PEMC	0.13
			A-4 Dam	FEAR(5%);POPE(5%);COBBLE(15%)					
				RUME(2%);AMFR(2%);					
	4c	Linear	Channel below	TYLA(60%);CANE(20%);JUBA(10%);	1.00, 1.00	Seepage Water	Not Det.	PEMB	0.03
			A-4 Dam	COBBLE(10%)					
	4d	Polygon	Left Overbank	AMFR(60%);CANE(10%);BAOR(5%);	2.00, 1.42	Seepage Water	Not Det.	PSSC	0.04
			A-4 Dam	JUBA(10%);CIAR(10%)					
	4e	Polygon	Chann./Overbank	SAEX(70%);BAOR(5%);CANE(10%);	1.50, 1.10	Seepage Water	Not Det.	PSSC	0.06
			ds. A-4 Dam	JUBA(10%);COBBLE(10%)					
	4f	Polygon	Chann. Confl. with	CANE(30%);ECMU(10%);JUBA(10%)	2.42, 1.80	Seepage Water	Not Det.	PEMC	0.04
			WCL and WCB	BAOR(5%);RUME(10%);FEAR(5%);					
			drainages	CIAR(5%);					
WCB	1a	Point	Along link fence by	SAEX(100%)	1.00, 1.00	Sat. in upper 12"	Not Det.	PEMC	0.003
B-ser.			sewage plant						
Ponds									
Oct. 31	1 b	Polygon	Ends of Ditch by	TYLA(95%);JUIN(2%);AGST(3%)	2.33, 1.10	Sat. in upper 12"	Not Det.	PEMB	0.04
			Sewage Plant						
	1bc	Linear	Ditch	OPEN WATER/COBBLE	1.00, 1.00	Flowing Water	Not Det.	R4SBJ	0.02

SNOW	1aa	Polygon	Tube Outlet Along	OPEN WATER	1.00, 1.00	Standing Water,	Not Det.	PUBHh	0.01
MELT			Outer Plant Road			2' depth			
Oct. 31									
	1bb	Linear	Channel	SAEX(100%)	1.00, 1.00	Flowing Water	Not Det.	PSSC	0.01
	1c	Linear &	Channel Near	COBBLE/OPEN WATER	1.00, 1.00	Flowing Water	Not Det.	R4SBG	0.01
		Polygon	Sewage Plant						
	1d	Polygon	B-1 Pool, SW023	OPEN WATER	1.00, 1.00	Standing Water,	Not Det.	PUBHh	0.005
			(behind weir)			3-4 ft Depth			
	1e	Polygon,	Upper Pool Fluct.	TYLA(80%);SAEX(5%);SCAM(5%)	1.00, 1.00	Surface Sat. in	Not Det.	PEMBh	0.21
			Zone in B-1			Pool Zone			
	1f	Polygon	Lower Pool Zone	UNCONS. BOTTOM(50%)OPEN	1.00, 1.00	In Pool Zone	Not Det.	PUBFh	0.5
			of B-1	WATER (15%);ANN. VEG (15%)					
				TYLA(10%)					
	1g	Polygon	Right Side of	JUBA(60%);CIAR(10%)	2.50, 1.43	Subject to	Not Det	PEMAh	0.07
			B-1 Pond			Irrigation Drift			
	1h	Polygon	Near Left Dam	SAEX(100%)	1.00, 1.00	In Pool Zone	Not Det.	PSSCh	0.02
			Abutment						
Nov. 1	1i	Polygon	Lower Pool Fluct.	POPE(60%);ECMU(20%);COBBLE	1.40, 1.10	In Pool Zone	Not Det.	PEMCh	0.19
			Zone in B-2 Pond	(10%);POMO(5%);RUME(5%)					
	1j	Polygon	Upper Pool Fluct.	ELE1(30%);HOJU(15%);CIAR(20%);	2.57, 2.53	Upper Pool Zone	Not Det.	PEMAh	0.2
			Zone in B-2 Pond	AMPS(10%);AGST(10%);RUME(5%);					
				COBBLE(5%)					
	1k	Polygon	B-2 Pool Area	OPEN WATER (100%)	1.00, 1.00	Depth> 6.6 ft.	Not Det.	L1UBH	0.72
	1l	Polygon	Mid Pool Fluct.	TYAN(65%);CIAR(30%);JUBA(5%)	2.00, 1.90	In Pool Zone	Not Det.	PEMCh	0.08
			Zone of B-2						
	1m	Polygon	Left Bank, Near	SAEX(95%);CIAR(4%);NECA(1%)	3.00, 1.15	In Pool Zone	Not Det.	PSSCh	0.02
			B-2 Embankment						
	1n	Linear	Lower Pool Fluct.	TYLA(80%);POPE(20%)	1.00, 1.00	Low in Pool Zone	Not Det.	PEMFh	0.01
			Zone of B-2						
	1nn	Polygon,	B-3 Pool Area	OPEN WATER (100%)	1.00, 1.00	Depth About 2 ft.	Not Det.	PUBHh	0.43

WCB	1p	Polygon	Lower Pool Fluct.	TYLA(90%);OPEN WATER(10%)	1.00,	1.00	Low in Pool Zone	Not Det.	PEMFh	0.44
Nov. 1			Zone							
	1pp	Polygon	Mid Pool Fluct.	TYLA(50%);CANE(10%);CIAR(15%);	2.50,	1.88	In Pool Zone	Not Det.	PEMCh	0.01
			Zone	FEAR(10%)						
SNOW	1q	Polygon	Upper Pool Fluct.	CIAR (50%);SYOC(20%);JUBA(10%);	2.50,	3.47	Pool Fringe	Not Det.	PEMAh	0.08
MELT			Zone, Right Bank	TYLA(old-5%)						
	1r	Polygon	Mid Pool Fluct.	TYLA(50%);CIAR(50%)	2.50,	2.50	In Pool Zone	Not Det.	PEMCh	0.05
			Zone, Left Bank							
	1s	Polygon,	B-4 Pool Area	OPEN WATER (100%)	1.00,	1.00	Depth About 3 ft.	Not Det.	PUBHh	0.29
	1t	Polygon	Seep Below B-4	TYLA(90%);CIAR(10%)	2.50,	1.30	Flowing Water	Not Det.	PEMB	0.01
			Dam							
	1u	Linear	Outlet to Downst.	TYLA(15%);SAEX(5%);FINES(20%);	2.20,	1.30	Flowing Water	Not Det.	R4SBG	0.005
			Channel	COBBLE(50%);CIAR(5%);FEAR(5%)						
	1v	Polygon	Chann./Overbank	SAEX(60%);SAAM(10%);PHAR(5%);	1.86,	1.31	Flowing Water	Not Det.	PSSC	0.16
				ULPU(2%);PODE(10%);AQBED(2%);						
				COBBLE(10%)						
	1w	Linear	Channel	COBBLE/GRVL(75%);TYLA(15%);	1.75,	1.24	Flowing Water	Not Det.	R4SBG	0.02
				AQBED(2%);CIAR(8%)						
	1x	Linear,	Channel, Joins	SAEX(90%); UNCONS.SHORE(10%)	1.00,	1.00	Flowing Water	Not Det.	PSSC	0.01
			B-5 Pond Backw.							
	1y	Polygon	Left Bank Pool	ECMU(20%);BUDA(10%);RUME(5%);	2.29,	1.74	High Pool Fluct.-	Not Det.	PEMCh	0.46
			Fluctuation Zone	HOJU(5%);POPE(5%);BRIN(10%)			to 6 ft.			
			Of Pond B-5	UNCONS SHORE(40%)						
	1z	Polygon	B-5 Pool Area	OPEN WATER (100%)	1.00,	1.00	Depth > 6.6 ft.	Not Det.	L1UBH	2.44
	1zz	Polygon	Upper Right Bank	JUBA(60%);CIAR(25%);POPR(10%);	3.00,	2.10	Pool Fringe Area	Not Det.	PEMAh	0.01
Below			of B-5 Pool	TYLA(old-1%)						
B-5										
Dam	2a	Polygon	Embankment	JUBA(25%);TYLA(old-10%);AGST	2.57,	2.67	Surf. Dry	Not Det.	PEMA	0.24
			Seep, S. Side	(10%);VETH(3%);POPR(5%);						
Nov. 1				CANE(5%);CIAR(40%)						

WCB	2b	Polygon	Embankment	TYAN(70%);CIAR(10%);JUBA(5%);	1.60, 1.32	Sat. in upper 12"	Not Det.	PEMC	0.11
			Seep, S. Side	CANE(5%);EPCI(5%)					
Below									
B-5	2c	Polygon	N. Aspect, Lower	JUBA(40%);TYLA(old-5%);CIAR(30%)	3.00, 2.58	Surface Dry	Not Det.	PEMA	0.15
Dam			Slope	HYPE(5%);POPR(5%);SYOC(10%)					
Nov. 1	2d	Polygon	In 2c Polygon	TYLA(60%);BAOR(10%);CIAR(20%);	2.67, 1.89	Drain. Channel	Not Det.	PEMC	0.02
			(poor condition)	TYLA litter(10%)					
	2e	Point	N. Aspect, near	TYAN(30%);SCPA(5%);CANE(5%);	1.86, 1.59	Drain. Channel	Not Det.	PEMC	0.001
SNOW			2d	AMPS(10%);AGST(5%);CAPR(10%)					
MELT				JUBA(15%)					
	2f	Polygon	Below Dam outlet	TYLA(80%);CIAR(5%);BAOR(5%);	2.25, 1.25	Surface Water	Not Det.	PEMB	0.02
				OPEN WATER(10%)					
	2g	Polygon	Channel	SAEX(65%);CANE(5%);CIAR(10%);	1.75, 1.30	Channel	Not Det.	PSSC	0.04
				COBBLE(20%)					
	2h	Polygon	Left Overbank	JUBA(80%);CIAR(5%);BRIN(5%);	3.00, 1.42	Channel-Surf Dry	Not Det.	PEMA	0.03
				CAPR(5%)					
	2i	Polygon	Channel	AGST(50%);POPR(5%);JUBA(25%);	2.60, 2.44	Channel-Surf Dry	Not Det.	PEMA	0.03
				CIAR(5%);CANE(5%)					
	2j	Polygon	Left Overbank	JUBA(70%);CAPR(10%);CIAR(15%);	2.25 1.65	Channel-Surf Dry	Not Det.	PEMA	0.04
				CANE(5%)					
	2k	Polygon	Channel	CIAR(65%);CANE(10%);JUBA(5%);	2.00, 3.44	Channel-Surf Dry	Not Det.	PEMA	0.02
				TYLA(litter-10%)					
	2l	Polygon	Channel/Banks	SAEX(70%);BAOR(10%);CIAR(10%);	2.60, 1.62	Channel-Surf. Dry	Not Det.	PSSC	0.04
				CANE(10%);SYOC(5%)					
	2m	Polygon	Chann./Overbank	JUBA(30%);CANE(10%);RUME(5%);	2.17, 2.50	Channel-Surf. Dry	Not Det.	PEMA	0.33
			ds to Road	AGST(10%);COBBLE(5%);					
			Crossing	CIAR(40%)					
	2n	Point	Old Channel	JUBA(90%);AGSM(10%)	2.50, 1.30	Channel-Surf. Dry	Not Det.	PEMA	0.002
	2o	Linear	Old Channel	See 2n	See 2n	See 2n	See 2n	PEMA	0.002
	2p	Polygon	Channel	JUBA(30%);AGST(30%);BAOR(5%);	2.63, 2.52	Channel-Surf Dry	Not Det.	PEMA	0.12
				FEAR(10%);BRIN(15%);CIAR(5%);					
				COBBLE(5%);TYAN(5%)					

WCB									
Slope	3a	Polygon	N. Aspect, Upper	JUBA(60%);SYOC(10%);CIAR(10%);	3.40, 2.20	Surf. dry to 12"	Clayey B Hor.	PEMA	0.02
Wet-			Slope, Near Gully	POCO(10%);AGSM(10%)		Seep In Gully	Mottling at 12"		
lands									
	3b	Polygon	N. Aspect, Upper	JUBA(70%);SYOC(5%);CIAR(10%);	3.25, 1.79	Surf.dry to12"	Clayey B Hor.	PEMA	0.43
			Slope,Near Gully	POCO(10%);TYLA(litter-2%)		Seep in Gully	Mottling at 6"		
Nov. 1									
	3c	Polygon	N. Aspect, Upper	CANE(80%);JUBA(10%);TYLA(5%);	1.00, 1.00	Surf. Hummocky	Not. Det.	PEMB	0.03
SNOW			Slope	EPCI(5%)		Saturated at Surf.			
COVER									
YET	3d	Polygon	N. Aspect, Mid	JUBA(80%);CIAR(10%);HYPE(10%);	3.20, 1.68	Surf. Hummocky,	No mottles at	PEMA	0.17
ON			Slope	AGST(1%);POCO(3%)		Sat at 10"	12"		
NORTH									
EXP.,	3e	Polygon	N. Aspect, Mid	JUBA(40%);AGST(3%);AMPS(2%);	3.00, 2.36	Surface Dry	Gvl/Cobble	PEMA	0.08
BUT			Slope	CIAR(30%);TYLA-litter-15%);			Surface Layer		
MELT-				VETH(1%);					
ING	3f	Polygon	N. Aspect, Upper	JUBA(50%);AGST(5%);BAOR(5%);	3.00, 2.22	Partly Hummocky	Gvl/Cobble	PEMA	1.32
FAST			Slope (old seep)	TYLA-litter-10%);CIAR(20%);		but drying out	Surface Layer		
				POCO/AGSM(10%)					
	3g	Polygon	N. Aspect, Upper	CANE(70%);TYLA(10%);BAOR(5%);	2.00, 1.26	Surf. Hummocky	Not Det.	PEMC	0.24
			Slope	SCPA(5%);CIAR(5%)					
	3i	Polygon	N. Aspect, Upper	JUBA(40%);CIAR(45%);AGSM(5%);	3.25, 2.74	Surface Moist	Surf. Cobble/	PEMA	0.23
			Slope Swale	TYLA(litter-5%);VETH/HYPE(5%)			Gvl;dk gray		
	3j	Polygon	N. Aspect, Mid	JUBA(80%);CIAR(10%);HYPE(5%);	3.25, 1.60	Partly Hummocky	Surf. Cobble/	PEMA	0.08
			Slope	AGSM(5%)			Gvl;dk gray		
	3k	Point	N. Aspect, Mid	JUBA(60%);CIAR(20%);HYPE(10%);	3.25, 2.20	Surf. Moist	Surf. Cobble/	PEMA	0.002
			Slope	AGSM(10%)			Gvl		
	3l	Polygon	N. Aspect, Mid	JUBA(60%);AGST(5%);CIAR(30%);	3.00, 2.09	Surf. Moist	Surf. Cobble/	PEMA	0.31
			Slope	TYLA(5%-litter);HYPE/VETH(2%)			Gvl		
	3m	Polygon	N. Aspect, old	JUBA(20%);CIAR(50%); TYLA	2.50, 3.14	Surf. Moist	Surf.Cobble/	PEMA	0.13
			seep, drying out	(litter-30%)			Gvl		
	3n	Polygon	N. Aspect, Upper	JUBA(50%);PAVI(5%):AMPS(5%);	3.17, 2.32	Surf Moist	Surf.Cobble/	PEMA	0.04
			Slope	POPR(20%);CIAR(10%);CANU(5%)			Gvl		

WCB	3o	Polygon,	N. Aspect, Upper	CANE(30%);JUTO(5%);TYLA(5%);	1.57, 1.29	Surf. Hummocky	Not Det.	PEMC	0.09
			Slope	TYLA(5%);MUAS(20%);JUBA(25%);					
Slope				EPCI(5%);CIAR(5%)					
Wetl.									
	3p	Polygon	N. Aspect, Upper	JUBA(50%);AGST(2%);CIAR(30%);	3.20, 2.35	Surf. Partly	Surf. Dk. Gray,	PEMA	1.5
Nov. 1			to Mid Slope	TYLA(litter-10%);HYPE/VETH(5%);		Hummocky	No Mottles, but		
				POPR(5%)			Claypan at 8"		
	3q	Polygon	N. Aspect, Mid	JUBA(85%);OEN1(2%);BAOR(2%);	3.20, 1.40	Leakage from 6"	Not Det.	PEMA	0.1
			Slope by Pipeline	CIAR(5%);POPR/POCO(5%)		pipeline			
	3r	Polygon	N. Aspect, Mid	JUBA(85%);OEN1(2%);HYPE(2%);	3.00, 1.37	Surface Moist	Surf. Dk.Gray,	PEMA	0.005
			Slope	RUME(3%);LASE(5%)			Some Mottling		
							Ferrans-4-10"		
	3s	Polygon	N. Aspect, Mid-	JUBA(10%);TYLA(litter-40%);CIAR	2.75, 3.18	Surface Moist	Not Det.	PEMA	0.09
			Slope	(30%);AGST(10%);BAOR(5%)					
	3t	Polygon	N. Aspect, Mid	JUBA(65%);CANE(5%);TYLA(10%);	1.40, 1.11	Surf. Hummocky	Not Det.	PEMC	0.33
			Slope	OBLIG.FORBS(10%);AGST(5%)					
	3u	Polygon	N. Aspect, Mid	JUBA(50%);CIAR(20%);VETH/HYPE	3.25, 2.42	Surface Moist	Not Det.	PEMA	0.11
			Slope	(5%);POPR(20%)					
	3v	Polygon	N. Aspect, Mid	JUBA(90%);AGST(5%);CIAR(5%);	2.25, 1.25	Large "cowlicks"	Surf Dk.Gray-	PEMA	0.29
			Slope	CANE(1%)			Ferrules at 8",		
							at the Claypan		
	3w	Polygon	N. Aspect, Upper	JUBA(75%);OEN1(2%);AGST(3%);	3.17, 1.72	Pipeline Seep,	Not Det.	PEMA	0.04
			Slope by Pipeline	AGSM(10%);CIAR(10%);RUME(1%)					
	3x	Polygon	N. Aspect, Upper	JUBA(60%);POPR(20%);CIAR(10%);	3.40, 2.13	Surface Moist	Not Det.	PEMA	0.03
			Slope	ROAR(5%);AGST(3%)					
	3y	Polygon	N. Aspect, Upper	CANE(60%);JUBA(20%);OBLIG.	1.17, 1.03	Surf. Hummocky	Not Det.	PEMC	0.2
			Slope	FORBS(10%);TYLA(5%);CAEM(5%);					
				MUAS(2%)					
	3z,3zz	Polygons	N. Aspect, Upper	JUBA(50%);VETH(5%);CIAR(10%);	3.63, 2.45	Surface Moist	Surf. Cobble/	PEMA	0.04
			Slope	OEN1(5%);SYOC(5%);HYPE(2%);			Gvl.		
				POPR(10%);AGSM(10%);TYLA					
				(litter-5%)					

WCL	1a	Polygon	Lower Pool Fluct-	TYLA/TYAN(90%);JUTO(5%);	1.67, 1.10	Surface Sat.	Not Det.	PEMBh	0.46
Land			uation Zone	BAOR(5%)					
Fill									
Pond	1b	Polygon	Upper Pool Fluct-	TYLA/TYAN(50%);SCPA(10%);	2.00, 1.70	Sat. in upper 12"	Not Det.	PEMCh	0.21
Area			uation Zone	JUTO(10%);BAOR(20%);CIAR(10%)					
Oct. 30									
SNOW	1c,	Polygon	Spray Irrig. Zone	CIAR(40%);JUBA(30%);JUTO(10%);	2.50, 2.67	Surface Moist	Not Det.	PEMA	0.13
COVER			Runoff & Drift	POCO(10%)					
	1d	Polygon	Surface, Land	OPEN WATER	1.00, 1.00	Depth> 6.6 ft.	Not Det.	L1UBH	2.26
			Fill Pond						
Oct. 31	2a	Linear	E. Aspect, Chann.	JUBA(30%);JUTO(5%);COBBLE(10%);	2.57, 2.45	Surface Moist	Not Det.	PEMA	0.05
Ds.			Below Land Fill	SYOC/ROAR(5%);AGST(20%);					
Land			Pond	AGSM(20%);POCO(10%)					
Fill									
Pond	2aa	Linear	SE Aspect, Side	See 2 a	See 2a	See 2 a	Not Det.	PEMA	0.04
			Drainage Chann.						
	2b	Linear	Upper Part of	JUTO(15%);TYLA(5%);SCPA(5%);	2.00, 2.07	Sat. in upper 12"	Not Det.	PEMC	0.01
			Side drainage	PAVI(5%);PODE(5%);COBBLE(20%);					
			Chann.	POCO(20%)					
	2c	Polygon	Upper Side	PAVI(20%);SAEX(10%);AGST(30%);	2.00, 2.54	Surface Moist	Not Det.	PEMA	0.02
			Channel	TYLA(5%)					
	2d	Linear	E. Aspect, Upper	TYLA(20%);LYAM(5%);CANE(10%);	2.00, 1.85	Sat. in upper 12"	Not Det.	PEMC	0.05
			Side Channel	SCPA(10%);COBBLE(20%);CAPR(1%)					
				AGSM(10%);AGST(10%);CIAR(10%);					
				EPCI(1%);					
	2e	Polygon	SE Aspect, Top	JUBA(40%);CANE(5%);BAOR(5%);	2.86, 2.42	Surface Moist	Not Det.	PEMA	0.2
			of Side Drainage	CIAR(10%);ROAR(5%);AGST(10%);					
				AGSM(20%)					
	2f	Polygon	Conf. of Side Ch.	SAEX(80%);AGST(10%);BAOR(5%);	2.00, 1.30	Sat. in upper 12"	Not Det.	PSSC	0.02
			& Main Channel	TYLA(5%)					
	2g	Linear	E. Aspect,	AGST(60%);JUBA(10%);AGSM(10%);	1.75, 2.50	Surface Moist	Not Det.	PEMA	0.03
			Upper Main Ch.	COBBLE(20%)					
	2h	Polygon	Left Overbank	JUBA(80%);CIAR(20%)	2.50, 1.60	Surface Moist	Not Det.	PEMA	0.05
SNOW									
COVER	2i	Linear	E Aspect, Middle	JUBA(20%);AGST(20%);AGSM(20%);	2.60, 2.60	Surface Moist	Not Det.	PEMA	0.09
MELT-			Main Channel	POCO(20%);COBBLE/GVL(20%)					
ING	2j	Polygon	E. Aspect, Lower	JUBA(60%);TYLA(5%);AGST(20%);	2.00, 1.50	Sat. in upper 12"	Not Det.	PEMC	0.04
			Main Channel	GLLE(5%);COBBLE(20%)					

WCL									
Ds. of	2k	Polygon	E. Aspect, Lower	JUBA(50%);AGST(20%);CIAR(10%);	2.60, 1.85	Surface Moist	Not Det.	PEMA	0.09
Pond			Main Channel	GLLE(5%);COBBLE(15%)					
Oct. 31	2l	Polygon	Chann./Overbank	SAEX(75%);JUBA(20%);CIAR(5%)	1.75, 1.16	Sat. in upper 12"	Not Det.	PSSC	0.06
				TYLA(1%)					
	2m	Polygon	E. Aspect, Lower	JUBA(40%);AGST(10%);TYLA(1%);	2.72, 2.31	Surface Moist	Not Det.	PEMA	0.49
			Main Channel	PODE(2%);HOJU(1%);COBBLE(10%)					
				GLLE(2%);AGSM(20%);APO1(1%)					
				CIAR(10%);POCO(5%)					
SNOW									
COVER	2n	Polygon	Drawdown Pool	ELE1(50%);TYLA(10%);PODE(5%);	1.80, 1.22	Sat. in upper 12"	Not Det.	PEMCh	0.14
MELT-			In Stock Dam	XAST(20%);RUME(5%)					
ING									
	2o	Polygon	Ds. of Dam to	JUBA(30%);TYLA(1%);CIAR(30%);	2.20, 2.78	Surface Moist	Not Det.	PEMA	0.11
			Across Road	COBBLE(10%);AGSM(30%)					
	2p	Linear	Ds Fence, Then	JUBA(10%);AGST(20%);CAPR(5%);	2.60, 2.79	Surface Moist	Not Det.	PEMA	0.09
			Ends in Dry Chan.	BUDA(5%);PODE(1%);AGSM(10%);					
			on Lower Slope	CANE(1%);RUME(1%);POCO(30%);					
				COBBLE/GVL(20%)					
	2q	Linear	Lower Channel	PAVI; FEAR;SAEX;AGST;AGSM:	no data	Surface Moist	Not Det.	PEMA	0.05
		Band		JUBA;POCO;COBBLE					
WCA	1a	Polygon	SE Aspect, Lower	JUBA (60%);CANE(40%)	1.00, 1.00	Drain. Pattern	Not Det.	PEMC	0.02
			Drainage Chann.						
Nov. 1									
	1b	Polygon	SE Aspect, Lower	JUBA(60%);PAVI(40%)	2.00, 2.00	Drain. Pattern	Not Det.	PEMA	0.02
			Drainage Chann.						
SNOW	1c	Polygon	S. Aspect, Upper	JUBA(60%);CIAR(20%);POPR20%)	3.00, 2.20	Surf. Moist and	Not Det.	PEMA	0.06
MELT			Slope			Hummocky			
	1e	Linear	S. Aspect, Upper	JUBA(60%);CAPR(10%);CIAR(10%);	2.60, 1.68	Surf. Moist and	Not Det.	PEMA	0.02
			Slope	CANE(10%);OEN1(5%)		Hummocky			
Nov. 2	1f	Point	S. Aspect, Mid	CAPR(100%)	3.00, 3.00	Near Drainage-	Not Det.	PEMA	5E-04
			Slope			way			
	1g	Polygon	E. Aspect, in	JUBA(30%);CAPR(15%);CANE(20%);	2.71, 2.27	Surf. Hummocky	Not Det.	PEMA	0.11
			Drainageway	AGST(10%);HOJU(3%);AGSM(15%);					
				POPR(10%)					

WCA	1h	Polygon,	E. Aspect, in	CANE(75%);AGST(20%);TYLA(5%)	1.67,	1.40	Sat. in upper 12"	Not Det.	PEMC	0.04
Nov. 2			Drainageway				Below Dam			
	1i	Polygon	Emergent Zone	TYLA(95%);CANE(5%)	1.00,	1.00	Surface Sat.	Not Det.	PEMBh	0.08
			Stock Pond							
	1j	Polygon	Pool Zone in	OPEN WATER	1.00,	1.00	Standing Water	Not Det.	PUBFh	0.009
			Stock Pond							
	1k	Polygon	E. Aspect, Mid	TYLA(25%);CANE(35%);JUBA(35%);	1.50,	1.10	Sat. in upper 12"	Not Det.	PEMC	0.11
			Slope	AGST(5%)						
	1l	Polgyon	N. Aspect, Right	JUBA(75%);AGST(5%);CIAR(10%);	3.00,	1.70	Surface Moist	Not Det.	PEMA	0.06
			Overbank	SYOC(10%)						
	1m	Polygon	Channel plus	JUBA(80%);GEAL(2%);CAPR(2%);	2.50,	1.35	Surface Moist	Not Det.	PEMA	0.08
			Left Overbank	SCAM(5%);AGST(6%);CIAR(5%)						
	1n	Linear	Channel, Mid	JUBA(20%);AGST(10%);CANE(30%);	2.20,	1.50	Surface Moist	Not Det.	PEMC	0.03
			Slope	SPPE(5%);CIAR(15%)						
	1o	Polygon	E. Aspect, Upper	JUBA(35%);CAPR(15%);CANE(5%);	2.25,	2.41	Surface Moist	Not Det.	PEMA	0.1
			Slope	CIAR(30%)						
	1p	Linear	E. Aspect, Upper	CAPR(20%);AGST(40%);AGSM(30%);	3.50,	3.40	Surface Moist	Not Det.	PEMA	0.01
			Drain. Chann.	POPR(10%)						
	1q	Polygon	E. Aspect, Upper	JUBA(40%);CAPR(30%);POPR(10%);	3.00,	2.50	Surface Moist	Not Det.	PEMA	0.33
			Slope	CIAR(20%)						
	1r	Polygon	E. Aspect, Upper	CANE(70%);EPCI(2%);LYAM(2%);	1.00,	1.00	Surf. Hummocky	Not Det.	PEMC	0.04
			Slope Chann.	JUBA(25%)						
	1s	Polygon	E. Aspect, Upper	JUBA(50%);CAPR(15%);POPR(10%)	3.00,	2.17	Surface Moist	Not Det	PEMA	0.07
			Slope	CIAR(15%)						
	1t	Polygon	E. Aspect, Upper	CAPR(70%);JUBA(15%);CANE(2%)	1.67,	2.61	Surface Moist	Not Det.	PEMA	0.03
			Slope							
	1u	Polygon	E. Aspect, Upper	JUBA(50%);CANE(20%);OBLIG.	1.75,	1.33	Surf. Hummocky	Not Det.	PEMC	0.06
			Slope	FORBS(10%);CIAR(10%)						
	1v	Linear	E. Aspect, Upper	JUBA(60%);CAPR(20%);JUTO(2%);	2.00,	1.75	Channel	Not Det.	PEMA	0.06
		Band	Slope Chann.	CANE(5%);COBBLE(5%);AGST(5%);						
				AGSM(10%)						
	1w	Polygon	E. Aspect, Upper	AGST(40%);JUBA(25%);CAPR(25%)	2.67,	1.75	Surface Moist	Not Det.	PEMA	0.02
			Slope Channel							

WCA	1x	Linear	SE Aspect, Up-	JUBA(25%);CAPR(25%);AGST(40%)	2.33, 2.44	Surface Moist	Not Det.	PEMA	0.01
Nov. 2			per Slope Chann.						
	1y	Polygon	SE Aspect, in Up-	CANE(60%);JUBA(10%);AGST(10%);	2.00, 1.55	Surf. Hummocky	Not Det.	PEMC	0.04
			per Drainage	TYLA(1%);CIAR(10%)					
	1z	Polygon	SE Aspect, in Up-	CANE(30%);CAPR(10%);JUBA(20%);	2.60, 2.26	Partly Hummocky	Not Det.	PEMA	0.06
			per Drainage	FEAR(2%);CIAR(30%)					
	2a	Polygon	SE Aspect, Drain-	CANE(40%);CAPR(20%);JUBA(15%);	2.40, 2.00	Surface Moist	Not Det.	PEMA	0.03
			age Channel	AGST(15%);AGSM(10%)					
	2b	Linear	SE Aspect, Lower	JUBA(15%);AGST(40%);CANE(15%);	2.25, 2.40	Surf. Moist	Not Det.	PEMA	0.05
			Drainage Chann.	FEAR(5%);AGSM(5%);TYLA(2%);					
				CAPR(20%);COBBLE(5%)					
	2c	Polygon	S. Aspect, Upper	No data	No data	No data	No data	PEMA	0.03
			Slope						
	2d	Polygon	S. Aspect, Middle	No data	No data	No data	No data	PEMA	0.07
			Slope						
IND1									
Oct. 30	1a	Polygon	Old Stock Dam,	JUBA(40%);AGRE(20%);AGSM(20%);	3.20, 2.60	Old Pool Area	Not Det.	PEMh	0.03
			Upper Slope	BRTE(20%);CIAR(10%)					
SNOW									
COVER	1b	Point	Draw to South	JUBA(60%);CIAR(20%);POCO(10%);	3.00, 2.10	Surface Moist	Not Det.	PEMA	0.005
(6")			of Stock Dam	PAVI(10%)					
	1c	Polygon	E. Aspect, Upper	JUBA(60%);CANE(5%);PAVI(10%);	2.40, 1.80	Drain. Pattern	Not Det.	PEMA	0.15
			Drainage	CIAR(10%);AGST(15%)					
	1d	Polygon	E. Aspect, Upper	TYAN(40%);JUTO(15%);JUIN(5%);	2.29, 1.79	Drain. Pattern	Not Det.	PEMC	0.03
		Band	Drainage	LYAM(5%);AGST(20%);PAVI(5%);					
				ELCA(5%)					
	1e	Polygon	E. Aspect, Upper	JUBA(30%);TYAN(30%);JUTO(10%);	1.86, 1.50	Surf. Hummocky	Not Det.	PEMC	0.07
			Drainage	JUIN(10%);PAVI(10%);AGST(5%);					
				SCPA(5%)					
	1f	Polygon	E. Aspect, Upper	TYAN(70%);EPCI(10%);SCPA(10%);	1.60, 1.15	Surf Hummocky--	Not Det.	PEMB	0.03
			Drainage	CANE(5%);CIAR(5%)		Surface Sat.			
	1g	Polygon	E. Aspect, Upper	TYAN(90%);JUBA(5%);AGST(3%);	1.80, 1.12	Surface Sat.	Not Det.	PEMB	0.11
			Drainage	LYAM(1%);CIAR(2%)					

IND1									
Oct. 30	1h	Polygon	E. Aspect, Mid	TYAN(30%);JUBA(35%);SCPA(5%);	2.00, 1.43	Sat. in upper 12"	Not Det.	PEMC	0.1
			Drainage	CANE(5%);JUTO(2%);AGST(5%);					
SNOW				CIAR(5%);AGSM(5%)					
COVER									
	1i &	Linear, 5'	E. Aspect, Mid	JUBA(70%);AGST(10%);ELCA(5%);	2.83, 1.66	Drain. Pattern	Not Det.	PEMC	0.04
	1ii	& Polygon	Drainage	CIAR(5%);AGSM(5%);XAST(1%);					
	1j	Polygon	E. Aspect, Lower	JUBA(60%);AGST(10%);HOJU(5%);	2.67, 1.94	Drain. Pattern	Not Det.	PEMA	0.26
			Drainage	AGSM(10%);CIAR(10%);LYAM(1%)					
	1k	Polygon	E. Aspect, Lower	JUBA(100%)	1.00, 1.00	Drain. Pattern	Not Det.	PEMC	0.01
			Drainage						
	1l	Point	E. Aspect, Lower	JUBA(50%);POCO(50%)	2.50, 2.50	Drain. Pattern	Not Det.	PEMA	0.005
			Drainage						
	1m	Polygon	E. Aspect, Lower	See 1 l	See 1 l	Drain. Pattern	Not Det.	PEMA	0.02
			Drainage						
IND2									
	1a	Polygon	Stock Well Area,	TYAN(100%)	1.00, 1.00	Surface Sat.	Not Det.	PEMB	0.01
Oct. 30			S. Aspect, Up. Sl.						
	1b	Polygon	S. Aspect, Upper	TYAN(5%);CIAR(30%);CANE(50%);	1.75, 1.90	Surf. Hummocky	Not Det.	PEMC	0.02
SNOW			Drainage Chann.	JUBA(15%)					
COVER									
	1c	Polygon	S. Aspect , Upper	JUBA(60%);CAPR(10%);AGSM(20%)	2.80, 1.94	Surf. Hummocky	Not Det.	PEMA	0.05
			Drainage Chann.	AGST(5%);JUIN(5%)					
WCD									
	3a	Polygon	Diversion Dam to	TYLA(80%);AMFR(10%);OPEN	1.00, 1.00	Standing Water	Not Det.	PEMBx	0.43
Nov. 2			Cross Road	WATER(5%)					
	3b	Polygon	Downstream of	TYLA(60%)	1.00, 1.00	Surface Sat.	Not Det.	PEMBx	0.01
			1st Weir						
	1a	Polygon	3rd Weir, Scour	TYLA(50%);OPEN WATER(50%)	1.00, 1.00	Standing Water	Not Det.	PEMFx	0.04
Walnut			Hole						
Creek	1b	Polygon	4th Weir, Scour	OPENWATER (100%)	1.00, 1.00	Standing Water	Not Det.	PUBFx	0.01
Div.			Hole			1 ft. depth			
Ditch	1c	Polygon	5th Weir, Scour	OPEN WATER (100%)	1.00, 1.00	Standing Water,	Not Det.	PUBFx	0.02
			Hole			1-2 ft. depth			
SNOW	1d	Polygon	Downstream 5th	TYLA(100%)	1.00, 1.00	Surface Sat.	Not Det.	PEMBx	0.03
COVER			Weir in Ditch						

WCD	1e	Polygon	Downstream 6th	TYLA(100%)	1.00, 1.00	Surface Sat.	Not Det.	PEMBx	0.08
			Weir in Ditch						
	1f	Polygon	Downstream 7th	OPEN WATER(100%)	1.00, 1.00	Standing Water,	Not Det.	PUBFx	0.01
Nov. 2			Weir in Ditch			2ft depth			
	1g	Polygon	Downstream 7th	TYLA(100%)	1.00, 1.00	Surface Sat.	Not Det.	PEMBx	0.4
			Weir in Ditch						
	1h	Polygon	Scour Hole below	OPEN WATER(100%)	1.00, 1.00	Standing Water,	Not Det.	PUBFx	0.01
			8th Weir in Ditch			2 ft. depth			
	1i	Polygon	Below 8th Weir	TYLA(100%)	1.00, 1.00	Surface Sat.	Not Det.	PEMBx	0.16
			in Ditch						
Walnut	1j	Polygon	Below 9th Weir	SAEX(50%);COBBLE(50%)	1.00, 1.00	Drain. Pattern	Not Det.	PSSCx	0.02
Creek			Scour Hole						
Div.	1k	Polygon	Downstream 9th	TYLA(100%)	1.00, 1.00	Drain. Pattern	Not Det.	PEMBx	0.24
Ditch			Weir						
	1l	Polygon	Below 10th Weir,	SAEX(100%)	1.00, 1.00	Drain Pattern	Not Det.	PSSCx	0.03
			Scour Hole						
	1m,1n	Polygons	Downstrream 10th	TYLA(100%)	1.00, 1.00	Surface Sat.	Not Det.	PEMBx	0.24
			Weir						
	1o	Polygon	Below 11th Weir,	SAEX(100%)	1.00, 1.00	Drain. Pattern	Not Det.	PSSCx	0.01
			Scour Hole						
	1p	Polygon	Below 11th Weir	TYLA(100%)	1.00, 1.00	Surface Sat.	Not Det.	PEMBx	0.05
			Ditch						
SNOW	1q	Polygon	Below 12th Weir,	PODE(50%);SAEX(30%);SAAM(20%)	1.00, 1.00	Drain Pattern	Not Det.	PSSCx	0.01
COVER			Scour Hole						
	1r	Polygon	Below 12th Weir,	TYLA(100%)	1.00, 1.00	Surface Sat.	Not Det.	PEMBx	0.02
			Ditch						
	1s	Polygon	E. Aspect, Upper	TYLA(100%)	1.00, 1.00	Surface Sat.	Not Det.	PEMBx	0.02
			Diversion Ditch						
	1t	Polygon	Weir, Scour Hole	SAEX(100%)	1.00, 1.00	Drain. Pattern	Not Det.	PSSCx	0.01
			Upper Div. Ditch						
	1u	Polygon	E. Aspect, Upper	PODE(100%)	3.00, 3.00	Drain Pattern	Not Det.	PSSCx	0.07
			Diversion Ditch						
	1v	Polygon	E. Aspect, Upper	TYLA(100%)	1.00, 1.00	Surface Sat.	Not Det.	PEMBx	0.02
			Diversion Ditch						
	1w	Polygon	E. Aspect, Upper	SAEX(50%);PODE(50%)	2.00, 2.00	Drain. Pattern	Not Det.	PSSCx	0.01
			Diversion Ditch						
	1x	Polygon	E. Aspect, Upper	TYLA(100%)	1.00, 1.00	Surface Sat.	Not Det.	PEMBx	0.02
			Diversion Ditch						
	1y	Polygon	E. Aspect, Upper	TYLA(60%);OPEN WATER(40%)	1.00, 1.00	Surface Sat.	Not Det.	PEMBx	0.03

WCD	(1y cont'd)		Diversion Ditch						
Walnut	1z	Polygon	E. Aspect, Upper	TYLA(100%)	1.00, 1.00	Surface Sat.	Not Det.	PEMBx	0.01
Creek			Diversion Ditch						
Div.	2a	Polygon	E. Aspect, Middle	PODE(50%);SAEX(50%)	2.00, 2.00	Drain. Pattern	Not Det.	PSSCx	0.02
Ditch			Diversion Ditch						
	2b	Polygon	E. Aspect, Middle	PODE(50%);SAEX(50%)	2.00, 2.00	Drain. Pattern	Not Det.	PSSCx	0.01
Nov. 2			Diversion Ditch						
	2c	Point	Middle Diversion	TYLA(100%)	1.00, 1.00	Surface Sat.	Not Det.	PEMBx	0.003
SNOW			Ditch						
COVER	2d	Polygon	Weir Scour Hole,	SAEX(50%);PODE(50%)	2.00, 2.00	Drain Pattern	Not Det.	PSSCx	0.01
			Middle Channel						
	2e	Polygon	Weir Scour Hole,	See 2d	See 2d	See 2d	Not. Det.	PSSCX	0.02
			Middle Channel						
	2f	Polygon	Weir, Scour Hole	See 2d	See 2d	See 2d	Not Det.	PSSCx	0.03
			Middle Channel						
	2g	Polygon	Weir Scour Hole,	TYLA(50%);COBBLE(50%)	2.00, 2.00	Drain. Pattern	Not Det.	PEMCx	0.003
			Middle Channel						
	2h	Polygon	Weir Scour Hole	SAEX(50%);PODE(50%)	2.00, 2.00	Drain. Pattern	Not Det.	PSSCx	0.02
			Middle Channel						
Start	2i,2j	Polygons	Middle Stab.	SAEX(50%);PODE(50%)	2.00, 2.00	Drain. Pattern	Not Det.	PSSC	0.12
Nat.			Channel						
Chann.	2k	Polygon	Lower Stab.	TYLA(100%)	1.00, 1.00	Saturated	Not Det.	PEMB	0.01
of WCD			Channel						
	2l	Polygon	Lower Stab.	CANE(40%);PODE(25%);AGST(20%)	2.75, 2.26	Drain. Pattern	Not Det.	PEMC	0.01
			Channel	CIAR(10%)					
	2m	Polygon	Lower Stab.	TYLA(50%);SAEX(50%)	1.00, 1.00	Surface Sat.	Not Det.	PEMC	0.02
			Channel						
	2n	Polygon	Lower Stab.	SAEX(50%);PODE(50%)	2.00, 2.00	Drain Pattern	Not Det.	PSSC	0.01
			Channel						
	2o,2p	Polygons	Lower Stab.	PODE(50%);COBBLE(50%)	2.50, 2.50	Drain. Pattern	Not Det.	PSSA	0.13
			Channel						
	2q	Polygon	Lower Stab.	PODE(50%);COBBLE(50%);	2.50, 2.50	Drain. Pattern	Not Det.	PSSA	0.2
			Channel						
	2r	Polygon	Lower Stab.	PODE(50%);COBBLE(50%);	2.50, 2.50	Drain. Pattern	Not Det.	PSSA	0.17
			Channel						
	2s	Polygon	Stab. Channel to	PODE(50%);SAEX(50%)	2.00, 2.00	Drain. Pattern	Not Det.	PSSC	0.06
			Main WCM5 Ch.						

WCM4	1a	Polygon	Joins WCL, WCB	JUBA(60%);FEAR(20%);CIAR(20%)	2.33, 2.2	Drain. Pattern	Not Det.	PEMA	0.01
Nov. 2			& WCM3						
SNOW	1b	Linear	Channel	COBBLE(90%);UPLAND(10%)	2.50, 1.30	Drain. Pattern	Not Det.	R4SBJ	0.15
COVER									
LOSS	1c	Polygon	Left Overbank	JUBA(90%);COBBLE(5%);UPL.(5%)	2.00, 1.15	Drain. Pattern	Not Det.	PEMA	0.02
(pm)									
	1d	Polygon	Left Overbank	AMFR(80%);COBBLE (10%)	2.00, 1.10	Drain. Pattern	Not Det.	PSSA	0.01
				UPLAND(10%)					
	1e	Polygon	Chann./Overbank	AMFR(60%);JUBA(20%);AGST(10%)	1.67, 1.22	Drain. Pattern	Not Det.	PSSA	0.02
	1f	Point	Chann./Overbank	JUBA(70%);FEAR(10%);GLLE(10%);	3.25, 1.90	Drain. Pattern	Not Det.	PEMA	0.005
				CIAR(10%)					
	1g, 1h	Polygons	Chann./Overbank	JUBA(80%);AMFR(10%);CIAR(10%)	2.00, 1.30	Drain. Pattern	Not Det.	PEMA	0.02
	1i	Polygon	Right Overbank	JUBA(80%);CIAR(10%);GLLE(10%)	3.00, 1.60	Drain. Pattern	Not Det.	PEMA	0.01
	1j	Polygon	Chann./Overbank	SAEX(90%);SYOC(10%)	2.50, 1.30	Drain. Pattern	Not Det.	PSSA	0.04
	1k	Polygon	Chann./Overbank	JUBA(60%);CIAR(20%);CANE10%)	2.00, 1.50	Drain. Pattern	Not Det.	PEMA	0.02
	1l, 1m	Polygons	Chann./Overbank	JUBA(60%);FEAR(10%);CIAR(20%)	3.00, 1.80	Drain. Pattern	Not Det.	PEMA	0.02
	1n	Polygon	Chann./Overbank	AMFR(15%);CIAR(30%);TYLA(30%);	2.17, 2.29	Drain. Pattern	Not Det.	PEMC	0.04
				JUBA(10%);BAOR(15%)FEAR(5%)					
	1o	Polygon	Chann./Overbank	TYLA(60%);CIAR(20%);CANE(20%)	2.00, 1.60	Drain. Pattern	Not Det.	PEMC	0.04
WCM5									
	1a	Polygon	Chann./Overbank	PODE(30%);SAEX(20%);JUBA(10%);	2.00, 2.00	Drain. Pattern	Not Det	PSSA	0.38
SNOW		Band		AMFR(20%);FEAR(10%);COBBLE(10%)					
COVER									
LOSS	1c	Linear	Channel	COBBLE(50%);MOSS(20%)	1.00, 1.00	Drain . Pattern,	Not Det.	R4SBJ	0.006
(pm)						Moss			
	1d	Polygon	Chann./Overbank	SAAM/SAEX(80%);FEAR(10%);	2.00, 1.30	Drain. Pattern	Not Det.	PSSA	0.05
				COBBLE(10%)					
	1e	Linear	Channel	COBBLE/MOSS(80%);FEAR(20%)	2.50, 2.00	Drain. Pattern,	Not Det.	R4SBJ	0.03
						Moss Present			
	1f	Polygon	Right Overbank	JUBA(80%);CIAR(20%)	2.50, 1.60	Drain. Pattern	Not Det.	PEMA	0.01

WCM5									
	1g	Polygon	Chann./Overbank	CANE(80%);FEAR(20%);	2.50, 1.60	Drain. Pattern	Not Det.	PEMC	0.12
Nov. 2									
(pm)	1h	Point	Left Overbank	JUBA(80%);CIAR(20%)	2.50, 1.60	Drain. Pattern	Not Det.	PEMA	0.003
SNOW	1i	Polygon	Right Overbank	See 1 h above	2.50, 1.60	Drain. Pattern	Not Det.	PEMA	0.01
COVER									
LOSS	1 ii	Linear	Channel	COBBLE/UNCONS. BOTTOM(80%)	1.00, 1.00	Drain. Pattern,	Not Det.	R4SBJ	0.01
				FEAR(20%)		Moss			
	1j	Polygon	Left Overbank	AMFR(50%)SAEX(40%)	1.00, 1.00	Drain. Pattern,	Not Det.	PSSA	0.01
	1k	Polygon	Left Overbank	JUBA(80%);CIAR(20%);CANE(5%)	2.00, 1.65	Drain. Pattern	Not Det.	PEMA	0.05
	1m	Polygon	Chann./Overbank	SAEX(40%);AMFR(15%);PODE(40%)	2.00, 2.17	Drain. Pattern	Not Det.	PSSA	0.09
				JUBA(5%);FEAR/BRIN(20%)					
	1n	Linear	Channel	COBBLE(60%);MOSS(30%)	1.00, 1.00	Drain. Pattern,	Not Det.	R4SBJ	0.02
						Moss			
	1nn	Linear	Along Right Bank	AMFR/SAEX(100%)	1.00, 1.00	Drain Pattern	Not Det.	PSSA	0.005
	1nnn	Polygon	Along Left Bank	JUBA(100%)	1.00, 1.00	Drain. Pattern	Not Det.	PEMA	0.04
	1o	Polygon	Channel	COBBLE(40%);JUBA/CANE(30%)	1.00, 1.00	Drain. Pattern,	Not Det.	R4SBJ	0.04
				MOSS		Moss			
	1oo	Polygon	Along Left Bank	JUBA/CANE(100%)	1.00, 1.00	Drain. Pattern	Not Det.	PEMA	0.02
	1p	Polygon	Chann./Overbank	SAEX(60%);SAAM(40%)	1.00, 1.00	Drain. Pattern	Not Det.	PSSA	0.03
	1q	Linear	Channel	COBBLE(40%);UNCONS.BOTTOM	1.00, 1.00	Surf. Sat.	Not Det.	R4SBJ	0.01
				(40%);TYLA(5%)					
	1r	Polygon	Chann./Overbank	PODE(60%):SAEX(40%)	2.00, 2.00	Drain. Pattern	Not Det.	PFOA	0.06
	1s	Linear	Channel, ds to	COBBLE(60%);MOSS(10%);UNCON-	1.00, 1.00	Drain. Pattern,	Not Det.	R4SBJ	0.04
			Small Weir	IDATED BOTTOM(10%)		Moss			
	1t	Linear	Linear Connect to	CANE(30%);JUBA(30%);FEAR(30%)	2.00, 2.00	Drain. Pattern	Not Det.	PEMA	0.005
			Channel Bank						
	1u	Polygon	Left Overbank	JUBA(60%);CANE30%);CIAR(10%)	2.00, 1.30	Drain. Pattern	Not Det.	PEMA	0.03

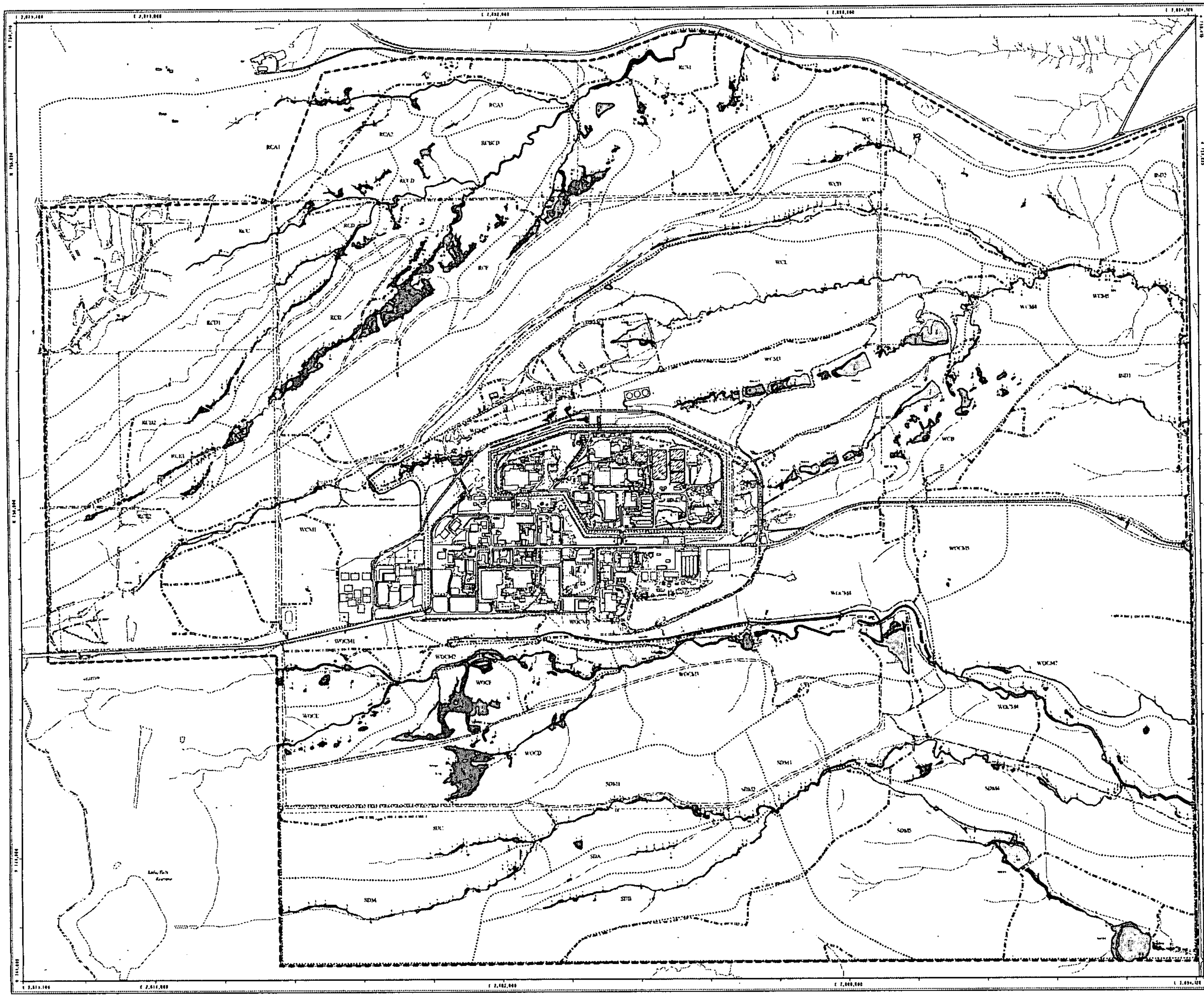
WCD									
	1v	Polygon	Chann./Overbank	SCAM(30%);CANE(20%);JUBA(20%);	1.75, 1.90	Drain. Pattern	Not Det.	PEMA	0.02
Nov. 2				FEAR(30%)					
(pm)	1w	Polygon	Chann./Overbank	SAAM(80%);TYLA(20%)	1.00, 1.00	Drain. Pattern	Not Det.	PEMC	0.01
	1x	Polygon	Pond behind weir	OPEN WATER(100%)	1.00, 1.00	Standing Water	Not Det.	PUBHh	0.29
	1y	Polygon	Chann. Overbank	SAEX(100%)	1.00, 1.00	Seepage Water	Not Det.	PSSC	0.01
			Below Dam						
	1z	Linear	Channel	COBBLE	1.00, 1.00	Drain. Pattern	Not Det.	R4SBJ	0.02

						ing Water			
Trib.E1									
Aug.30	3a	Polygon	Pool Fringe Area	JUBA(20%);TYLA/SCVA(20%);SAEX	1.86, 1.78	Sat. in upper 10"	Not Det.	PEMCh	0.03
			Above Dam	(10%);BAOR(10%);AMFR(5%);PODE					
				(5%);AGST(20%)					
	3b	Point	Pool Area Above	ALGAE(30%);OPEN WATER(70%)	1.00, 1.0	2-3 ft Depth, Stand-	Not Det.	PUBHh	0.02
			Dam			ing Water			
	4a	Polygon	Channel Below	JUBA(50%);JUIN(10%);SPPE(10%);	2.50, 1.9	Surface Dry, but	Not Det.	PEMA	0.25
			Dam	AGSM(10%);AGST(5%);CIAR(5%)		Scour Holes 3-4'			
				CAL1(2%);AMFR(1%)		Deep			
Aug. 31	5a	Polygon	Channel	JUBA(50%);SPPE(20%);CANE(5%);	2.20, 1.7	Surface Dry	Not Det.	PEMA	0.92
				CAR1(5%);CIAR(15%);trace levels of					
				AGST,AMFR, and AGSM					
	5b	Point	Channel	ELAC/ALGAL MAT(30%);UNCONS.	1.00, 1.0	Scour Hole 2-4'	Not Det.	R4SBC	<0.002
				BOTTOM (70%)		Deep			
	5c	Point	Channel	ALSU/ALGAL MAT(30%);UNCONS.	1.00, 1.0	Scour Hole 2-4'	Not Det.	R4SBC	<0.002
				BOTTOM (70%)		Deep			
	5d	Point	Channel	ALGALMAT(30%)UNCONS.BOTT.(70%)	1.00, 1.0	Scour Hole 2-4'	Not Det.	R4SBC	<0.002
						Deep			
	5e	Point	Channel	ELAC(20%);JUBA(20%);ECMU(20%);	1.00, 1.0	Scour Hole 2-4'	Not Det.	R4SBC	<0.002
				ALGALMAT(40%)		Deep			
	5f	Point	Channel	ECMU(20%);ELAC(20%);POOL(10%);	1.00, 1.0	Scour Hole 2-4'	Not Det.	R4SBC	<0.002
				ALGALMAT(50%)		Deep			
	5g	Point	Channel	ALGALMAT(70%);CAEM(30%)	1.00, 1.0	Scour Hole 2-4'	Not Det.	R4SBC	<0.002
						Deep			
	5 h, i	Points	Channel	EUP1(20%)CAR1(20%);ECMU(20%);	2.25, 2.00	Scour Hole 2-4'	Not Det.	R4SBC	<0.002
				ALGALMAT(40%)		Deep			
	5j	Point	Channel	ECMU(20%);EUP1(20%);SPPE(20%);	2.00, 1.8	Scour Hole 1,5'	Not Det.	R4SBC	<0.002
				ALGALMAT(40%)					
	5k	Point	Channel	EUP1(10%);ECMU(10%);ALSU(10%);	1.50, 1.30	Scour Hole2.5'	Not Det.	R4SBC	<0.002
				ELAC(10%);CANE(10%);ALGALMAT(50%)		Deep			
	5l	Point	Channel	VEBR(10%);ELAC(10%);SPPE(10%);	2.00, 1.4	Scour Hole 1.5'	Not Det.	R4SBC	<0.002
				ALGALMAT(70%)		Deep			
	5m	Point	Channel	SPPE(20%);ALGALMAT(80%)	1.50, 1.20	Scour Hole 2.5'	Not Det.	R4SBC	<0.002

Trib.E1									
Aug. 31	5n	Point	Channel	EUP1(20%);ELAC(20%);CAR1(30%);	2.25, 2.33	Scour Hole 2.5'	Not Det.	PEMC	<0.002
				ALGALMAT(20%)		Deep			
	6a	Polygon	Upper Pool Area	ELAC(75%);AMPS(10%);POMO(5%);	2.00, 1.3	Shoreline/Mud	Not Det.	PEMCh	0.67
		(includes 6b &6c)		APCA(5%);ELE1(2%);XAST(5%)		Flats			
	6b	Polygon	Dam Pool Area	OPENWATER/MUDFLAT((70%);	1.00, 1.0	Water Depth 0-2'	Not Det.	PUBF	0.32
				POPE/ELE1(30%)					
	6c	Polygon	Upper Pool Area	PODE(80%);UNCONS.BOTTOM(20%)	2.00, 2.6	Sat. in upper 10"	Not Det.	PSSC	0.02
Trib. E2									
	7a	Polygon	Channel	SPPE(40%);JUBA(30%);CANE(15%);	1.67, 1.56	Surface Dry	Not Det.	PEMC	0.92
				CIAR(5%);IRMI(5%);CALA(2%)					
Trib. E2	7b	Point	Channel	UNCONS.BOTTOM(80%);CALA(10%)	1.00, 1.0	Scour Hole 1'	Not Det.	R4SBC	<0.002
				ELAC(10%)		Deep			
	7c	Point	Channel	UNCONS.BOTTOM(80%);ALSU(10%);	2.00, 1.30	Scour Hole 1'	Not Det.	R4SBC	<0.002
				EUP1(10%)		Deep			
	7d	Point	Channel	TYLA(70%);ALSU(10%);SPPE(10%)	1.25, 1.10	Scour Hole 1.5'	Not Det.	PEMF	<0.002
				UNCONS.BOTTOM(10%)		Deep			
	7e	Point	Channel	UNCONS.BOTTOM(70%);POPE(10%);	1.00, 1.0	Scour Hole 1.5'	Not. Det.	R4SBC	<0.002
				CALA(10%);ALSU(5%);ALAE(5%)		Deep			
	7f	Point	Channel	UNCONS.BOTTOM(70%);ELAC(15%);	1.00, 1.0	Scour Hole 1.5'	Not Det.	R4SBC	<0.002
				ECMU(15%)		Deep			
	7g	Point	Channel	UNCONS.BOTTOM(70%);ALSU(15%);	1.00, 1.0	Scour Hole 1.5-2'	Not Det.	R4SBC	<0.002
				CANE(15%)		Deep			
	7h	Point	Channel	ALSU(80%);SPPE(5%);UNCONS.	1.33, 1.05	Scour Hole	Not Det.	PEMF	<0.002
				BOTTOM (15%)					
	7i	Point	Channel	ALSU(90%);UNCONS.BOTTOM(10%)	1.00, 1.0	Scour Hole	Not Det.	PEMF	<0.002
						Sat. in upper 10"			
	7j	Point	Channel	ALSU(90%);ALGALMAT(10%)	1.00, 1.0	Scour Hole	Not Det.	PEMF	<0.002

Rocky Flats Environmental Technology Site

Wetlands Map



LEGEND

Cowardin Wetlands Classification Codes

Non-Wetland Features

Scale = 1 : 7200
1 inch represents 600 feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

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